MS2830A
Signal Analyzer
Operation Manual

Digital Fire and Disaster Prevention Radio Automatic Measurement Software (For T61/79/86)

Second Edition

- **For safety and warning information, please read this manual before attempting to use the equipment.**
- **Additional safety and warning information is provided within the "MS2830A Signal Analyzer Operation Manual (Mainframe Operation)" and "MX269017A Vector Modulation Analysis Software Operation Manual (Operation)." Please also refer to either of these documents before using the equipment.**
- **Keep this manual with the equipment.**

ANRITSU CORPORATION

Document No.: M-W3777AE-2.0

Safety Symbols

To prevent the risk of personal injury or loss related to equipment malfunction, Anritsu Corporation uses the following safety symbols to indicate safety-related information. Ensure that you clearly understand the meanings of the symbols BEFORE using the equipment. Some or all of the following symbols may be used on all Anritsu equipment. In addition, there may be other labels attached to products that are not shown in the diagrams in this manual.

Symbols used in manual

⚠ DANGER This indicates a very dangerous procedure that could result in serious injury or death if not performed properly.

⚠ WARNING This indicates a hazardous procedure that could result in serious injury or death if not performed properly.

⚠ CAUTION This indicates a hazardous procedure or danger that could result in light-to-severe injury, or loss related to equipment malfunction, if proper precautions are not taken.

Safety Symbols Used on Equipment and in Manual

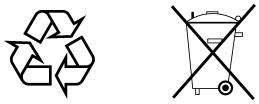
The following safety symbols are used inside or on the equipment near operation locations to provide information about safety items and operation precautions. Ensure that you clearly understand the meanings of the symbols and take the necessary precautions BEFORE using the equipment.

This indicates a prohibited operation. The prohibited operation is indicated symbolically in or near the barred circle.

This indicates an obligatory safety precaution. The obligatory operation is indicated symbolically in or near the circle.

This indicates a warning or caution. The contents are indicated symbolically in or near the triangle.

This indicates a note. The contents are described in the box.



These indicate that the marked part should be recycled.

MS2830A
Signal Analyzer Operation Manual
Digital Fire and Disaster Prevention Radio Automatic Measurement Software (For T61/79/86)

27 April 2015 (First Edition)
10 July 2015 (Second Edition)

Equipment Certificate

Anritsu Corporation guarantees that this equipment was inspected at shipment and meets the published specifications.

Anritsu Warranty

- During the warranty period, Anritsu Corporation will repair or exchange this software free-of-charge if it proves defective when used as described in the operation manual.
- The warranty period is 6 months from the purchase date.
- The warranty period after repair or exchange will remain 6 months from the original purchase date, or 30 days from the date of repair or exchange, depending on whichever is longer.
- This warranty does not cover damage to this software caused by Acts of God, natural disasters, and misuse or mishandling by the customer.

In addition, this warranty is valid only for the original equipment purchaser. It is not transferable if the equipment is resold.

Anritsu Corporation shall assume no liability for injury or financial loss of the customer due to the use of or a failure to be able to use this equipment.

Anritsu Corporation Contact

In the event of this equipment malfunctions, contact an Anritsu Service and Sales office. Contact information can be found on the last page of the printed version of this manual, and is available in a separate file on the DVD version.

Notes On Export Management

This product and its manuals may require an Export License/Approval by the Government of the product's country of origin for re-export from your country.

Before re-exporting the product or manuals, please contact us to confirm whether they are export-controlled items or not.

When you dispose of export-controlled items, the products/manuals need to be broken/shredded so as not to be unlawfully used for military purpose.

Software End-User License Agreement (EULA)

Please read this Software End-User License Agreement (hereafter this EULA) carefully before using (includes executing, copying, registering, etc.) this software (includes programs, databases, scenarios, etc., used to operate, set, etc., Anritsu electronic equipment). By reading this EULA and using this software, you are agreeing to be bound by the terms of its contents and Anritsu Corporation (hereafter Anritsu) hereby grants you the right to use this Software with the Anritsu-specified equipment (hereafter Equipment) for the purposes set out in this EULA.

1. Grant of License and Limitations

1. Regardless of whether this Software was purchased from or provided free-of-charge by Anritsu, you agree not to rent, lease, lend, or otherwise distribute this Software to third parties and further agree not to disassemble, recompile, reverse engineer, modify, or create derivative works of this Software.
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3. You are not permitted to reverse engineer this software.
4. This EULA allows you to install one copy of this Software on one piece of Equipment.

2. Disclaimers

To the extent not prohibited by law, in no event shall Anritsu be liable for personal injury, or any incidental, special, indirect or consequential damages whatsoever, including, without limitation, damages for loss of profits, loss of data, business interruption or any other commercial damages or losses, arising out of or related to your use or inability to use this Software.

3. Limitation of Liability

a. If a fault (bug) is discovered in this Software, preventing operation as described in the operation manual or specifications whether or not the customer uses this software as described in the manual, Anritsu shall at its own discretion, fix the bug, or exchange the software, or suggest a workaround, free-of-charge. However, notwithstanding the above, the following items shall be excluded from repair and warranty.
   i) If this Software is deemed to be used for purposes not described in the operation manual or specifications.
   ii) If this Software is used in conjunction with other non-Anritsu-approved software.
   iii) Recovery of lost or damaged data.
   iv) If this Software or the Equipment has been modified, repaired, or otherwise altered without Anritsu's prior approval.
   v) For any other reasons out of Anritsu's direct control and responsibility, such as but not limited to, natural disasters, software virus infections, etc.

b. Expenses incurred for transport, hotel, daily allowance, etc., for on-site repairs by Anritsu engineers necessitated by the above faults shall be borne by you.

c. The warranty period for faults listed in article 3a above covered by this EULA shall be either 6 months from the date of purchase of this Software or 30 days after the date of repair, whichever is longer.

4. Export Restrictions

You may not use or otherwise export or re-export directly or indirectly this Software except as authorized by Japanese and United States law. In particular, this software may not be exported or re-exported (a) into any Japanese or US embargoed countries or (b) to anyone on the Japanese or US Treasury Department's list of Specially Designated Nationals or the US Department of Commerce Denied Persons List or Entity List. By using this Software, you warrant that you are not located in any such country or on any such list. You also agree that you will not use this Software for any purposes prohibited by Japanese and US law, including, without limitation, the development, design and manufacture or production of missiles or nuclear, chemical or biological weapons of mass destruction.

5. Termination

Anritsu shall deem this EULA terminated if you violate any conditions described herein. This EULA shall also be terminated if the conditions herein cannot be continued for any good reason, such as violation of copyrights, patents, or other laws and ordinances.

6. Reparations

If Anritsu suffers any loss, financial or otherwise, due to your violation of the terms of this EULA, Anritsu shall have the right to seek proportional damages from you.

7. Responsibility after Termination

Upon termination of this EULA in accordance with item 5, you shall cease all use of this Software immediately and shall as directed by Anritsu either destroy or return this Software and any backup copies, full or partial, to Anritsu.

8. Dispute Resolution

If matters of dispute or items not covered by this EULA arise, they shall be resolved by negotiations in good faith between you and Anritsu.

9. Court of Jurisdiction

This EULA shall be interpreted in accordance with Japanese law and any disputes that cannot be resolved by negotiation described in Article 8 shall be settled by the Japanese courts.

Before Using VISA*1

To use this product, a NI-VISA™*2 from National Instruments™ (hereafter NI™) must be installed on the PC controller. We recommend using NI-VISA™*2 provided in the DVD attached to this product.

You are allowed to use NI-VISA™*2 in the DVD only for this product. Use of this software for any other product or purpose is prohibited. When uninstalling this product from the PC controller, uninstall the NI-VISA™ that was installed from the DVD as well.

Glossary of Terms:

*1: VISA: Virtual Instrument Software Architecture
I/O software specification for remote control of measuring instruments using interfaces such as GPIB, Ethernet, USB, etc.

*2: NI-VISA™
World de facto standard I/O software interface developed by NI and standardized by the VXI Plug&Play Alliance.

Trademarks:

- National Instruments™, NI™, NI-VISA™ and National Instruments Corporation are all trademarks of National Instruments Corporation

Cautions Against Computer Virus Infection

- Copying files and data
  Only files that have been provided directly from Anritsu or generated using Anritsu equipment should be copied to the instrument.
  All other required files should be transferred by means of USB or CompactFlash media after undergoing a thorough virus check.
- Adding software
  Do not download or install software that has not been specifically recommended or licensed by Anritsu.
- Network connections
  Ensure that the network has sufficient anti-virus security protection in place.

Protection Against Computer Virus Infections

Prior to the software installation

Before installing this software or any other software recommended or approved by Anritsu, run a virus scan on your computer, including removable media (e.g. USB memory stick and CF memory card) you want to connect to your computer.

When using this software and connecting with the measuring instrument

- Copying files and data
  On your computer, do not save any copies other than the following:
  - Files and data provided by Anritsu
  - Files created by this software
  - Files specified in this document

  Before copying these files and/or data, run a virus scan, including removable media (e.g. USB memory stick and CF memory card).
- Connecting to network
  Connect your computer to the network that provides adequate protection against computer viruses.

Cautions on Proper Operation of Software

This software may not operate normally if any of the following operations are performed on your computer:

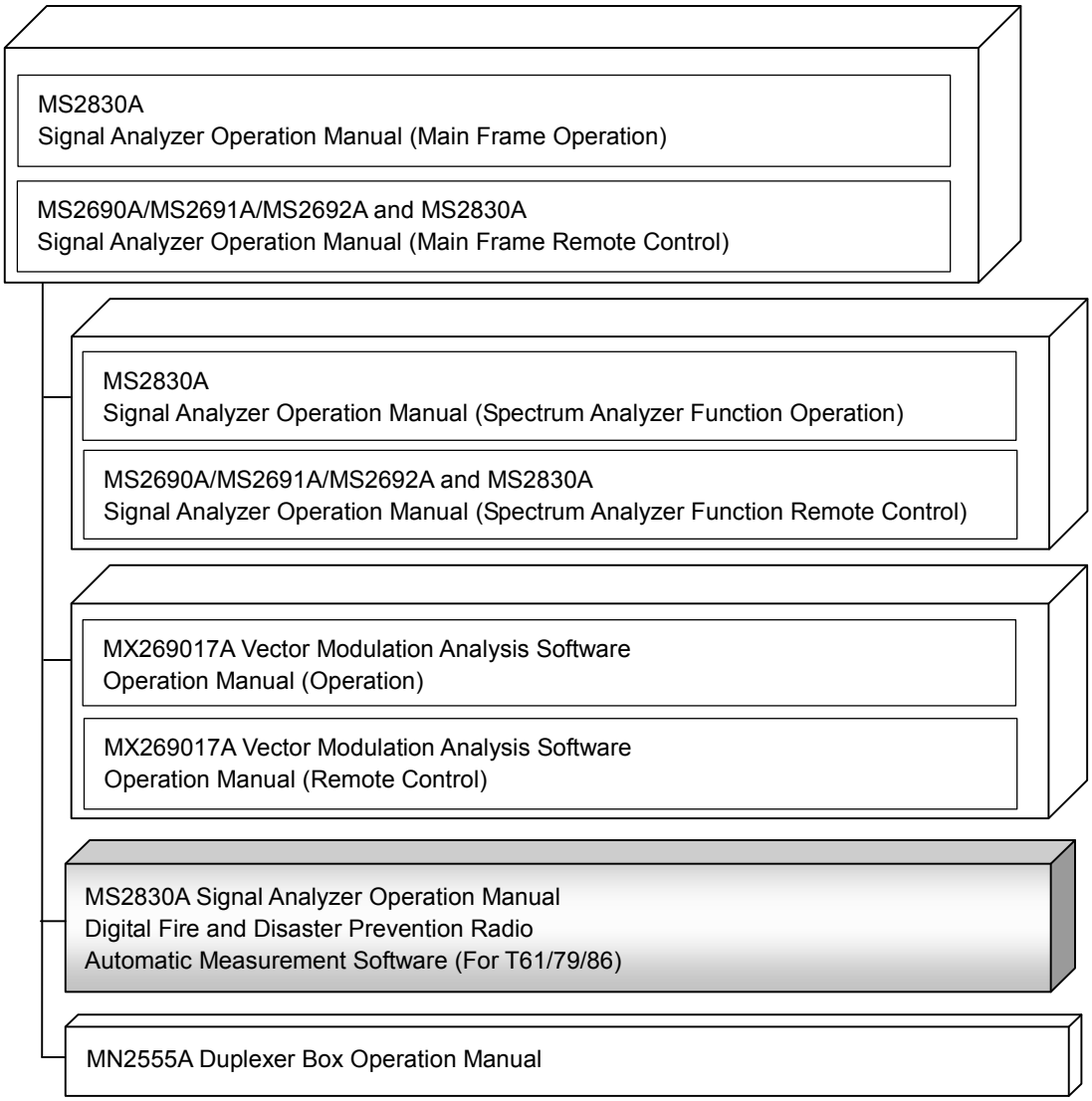
- Simultaneously running any software other than that recommended or approved by Anritsu
- Closing the lid (Laptop computer)
- Turning on the screen saver function
- Turning on the battery-power saving function (Laptop computer)

For how to turn off the functions, refer to the operation manual that came with your computer.

About This Manual

■ **Composition of Operation Manuals**

The operation manuals for
the Digital Fire and Disaster Prevention Radio Automatic Measurement Software (For T61/79/86)
is comprised as shown in the figure below.



- **Signal Analyzer Operation Manual (Mainframe Operation)**
- **Signal Analyzer Operation Manual (Mainframe Remote Control)**

These manuals describe basic operating methods, maintenance procedures, common functions, and common remote control of the signal analyzer mainframe.

- **Signal Analyzer Operation Manual (Spectrum Analyzer Function)**
- **Signal Analyzer Operation Manual (Spectrum Analyzer Function Remote Control)**

These manuals describe basic operations, functions and remote functions of the spectrum analyzer.

- **Vector Modulation Analysis Software Operation Manual (Operation)**

This manual describes operations and functions of the Vector Modulation Analysis Software.

- **Vector Modulation Analysis Software Operation Manual (Remote Control)**

This manual describes remote control of the Vector Modulation Analysis Software.

- **Signal Analyzer Operation Manual Digital Fire and Disaster Prevention Radio Automatic Measurement Software (For T61/79/86) <This document>**

This manual describes operations and functions of the Digital Fire and Disaster Prevention Radio Automatic Measurement Software (For T61/79/86).

- **Duplexer Box Operation Manual**

This manual describes the operation and maintenance of the Duplexer Box.

Table of Contents

IV.

Chapter 1 Preparation

This chapter provides an overview and the product configuration of the Digital Fire and Disaster Prevention Radio Automatic Measurement Software (For T61/79/86).

1.1 Product Overview

This software is a Windows-based software application that controls the MX269017A Vector Modulation Analysis Software (hereafter, MX269017A) and the spectrum analyzer function for automatic standard pass/fail test.

This software is usable on a Windows PC for control or the MS2830A. This software has two types: a product version called MX269057A and a free version with limited functions. For the difference between the product version and free version, refer to Table 1.1-1.

The necessary parameters are automatically set by selecting the standard corresponding to the communication system you want to test.

This software provides the following measurements.

Tx Modulation Wave Measurement.
- Tx Frequency Measurement
- Tx Power Measurement
- EMV Measurement
- Origin offset Measurement
- Spurious Measurement (Out of close-in area / Close-in area)
- Occupied Band Width Measurement
- Adjacent Channel Leakage Power Measurement

Tx CW Measurement
- Frequency Measurement (Counter)
- Spurious Measurement (Out-of-band area)

The following option is required to use this software.
- MX269017A Vector Modulation Analysis Software

"MS2830A-006/106" or "MS2830A-005/105/007/009 and MS2830A-006/106" is required to use the MX269017A on MS2830A.

The following USB power sensors are available.
- MA24108A, MA24118A USB power sensor

If you are using the free version, you will be able to use MX269057A (Product version) with more enhanced features by purchasing an MX269057A license key that matches the serial number of your MS2830A.

Table 1.1-1 shows the difference between Product and Free Versions.

Table 1.1-1 Function comparison between Product and Free Versions

Measurement items•Functions		Product Version	Free Version	Remarks
Modulation Wave Measurement	Power measurement	✓	✓	Measured by MX269017A The free version can measure only the waveforms supported by Predefined* of MX269017A.
	Frequency measurement	✓	✓	
	EVM measurement	✓	✓	
	Origin Offset measurement	✓	✓	
	Specifying the user defined files	✓		Measured by using the user defined files of MX269017A
	Spurious measurement (Spurious domain)	✓	✓	
	Occupied Band Width measurement	✓	✓	
	Adjacent Channel Leakage Power measurement	✓	✓	
CW Measurement	Frequency Counter measurement	✓	✓	
	Spurious measurement (Out-of -band area)	✓	✓	
Others	Total Result	✓		Displays the total result.
	Saving and Loading the parameter files	✓		

*: The setting indicated Predefined parameters on Table 1.3.1-1 “Specifications”.

1.2 Product Configuration

1.2.1 Standard configuration

Table 1.2.1-1 and Table 1.2.1-2 shows the standard configuration for this software.

Table 1.2.1-1 This Software Standard Configuration

Items	Model/ Symbol	Product Name	Q'ty	Remarks
Software	—	Digital Fire and Disaster Prevention Radio Automatic Measurement Software (For T61/79/86) Lite	1	

Table 1.2.1-2 MX269057A Standard Configuration

Items	Model/ Symbol	Product Name	Q'ty	Remarks
Software	MX269057A	Digital Fire and Disaster Prevention Radio Automatic Measurement Software (For T61/79/86)	1	
Accessories	—	Installation DVD-ROM	1	Application software, NI-VISA 5.0.3, Operation manual DVD-ROM

1.2.2 Applicable parts

Table 1.2.2-1 lists the applicable parts for this software.

Table 1.2.2-1 Applicable Parts

Model/Symbol	Product Name	Remarks
W3777AE	MS2830A Signal Analyzer Operation Manual Digital Fire and Disaster Prevention Radio Automatic Measurement Software (For T61/79/86)	English, Printed version

1.3 Product Specifications

When MS2830A is used, this software's specification is specified by the condition below, unless otherwise noted.

Attenuator Mode: Mechanical Attenuator Only

Nominal values are for designing and do not guarantee performance as standard values.
Typ. value does not represent guaranteed performance. The value just shows the level where the most products have satisfactory performance.

1.3.1 Specifications

Table 1.3.1-1 shows the specifications of this software.

Table 1.3.1-1 Specifications

Item	Specification
Tx Measurement	
Measurement frequency range	10 to 990 MHz, 1010 to 2000 MHz
Measurement level range	Same as MS2830A, MX269017A or USB Power sensor
Predefined parameter set	When measuring with MX269017A, the following predefined parameter sets are available. RCR39_PI4DQPSK_TCH_UL RCR39_PI4DQPSK_TCH_DL T61_SCPC_v1_0_SC T61_SCPC_v1_1_40ms_SC T61_SCPC_v1_1_20ms_SC T61_FDMA_PSC_UL T61_FDMA_PSC_DL T86_CCH_UL T86_CCH_DL T86_TCH_UL T86_TCH_DL
Tx Modulation Wave Measurement.	
Frequency	Accuracy: Same as MX269017A
Power	When not using USB Power sensor (MA24108A/MA24118A) Accuracy: Same as MX269017A When using USB Power sensor (MA24108A/MA24118A) Accuracy: Same as MS2830A Power meter function
EVM	Accuracy: Same as MX269017A
Origin offset	Accuracy: Same as MX269017A

Table 1.3.1-1 Specifications (Cont'd)

Item	Specification
Tx Modulation Wave Measurement. (Cont'd)	
Spurious	Out of close-in area / Close-in area Accuracy: Same as MS2830A Spectrum analyzer function Supports the parameter auto setting function for the following standard. ARIB STD-T61/ ARIB STD-T79/ ARIB STD-T86
Occupied Band Width	Accuracy: Same as MS2830A Spectrum analyzer function Supports the parameter auto setting function for the following standard. ARIB STD-T61/ ARIB STD-T79/ ARIB STD-T86
Adjacent Channel Leakage Power	Accuracy: Same as MS2830A Spectrum analyzer function Supports the parameter auto setting function for the following standard. ARIB STD-T61/ ARIB STD-T79/ ARIB STD-T86
Tx CW Measurement	
Frequency	Accuracy: Same as MS2830A Spectrum analyzer function
Spurious	Out-of-band area Accuracy: Same as MS2830A Spectrum analyzer function Supports the parameter auto setting function for the following standard. ARIB STD-T61/ ARIB STD-T79/ ARIB STD-T86
Function	
Correction	Loads the correction data for MN2555A.
Language	Changes the language between English and Japanese.
Parameter Save / Load	Saves and loads the parameter settings. (This function is available only for MX269057A.)

Chapter 2 Preparation

This chapter describes the preparations required for using the application software you are using. Refer to the *MS2830A Signal Analyzer Operation Manual (Mainframe Operation)* for common features of the MS2830A not included in this manual.

2.1 Previous Arrangement

2.1.1 Operating by control PC

The following items are required when you control the MS2830A using the control PC with this software.

■ Control PC

Table 2.1.1-1 Operating Environment for the control PC

PC	
OS	Windows 7 32bit/64bit
CPU	At least 1 GHz or faster Pentium III or equivalent
Memory	1 GB or more (32 bit), 2 GB or more (64 bit)
Hard disk	5 GB or more free space in the drive where this software is to be installed.
Peripheral device	
Display	Displays with a resolution of 1024 × 768 pixels are best viewed using a small font setting.
Software	NI-VISA 5.0.3 .NET Framework 4.0 version 4.0.30319 or later*

*: Installer contains this software.

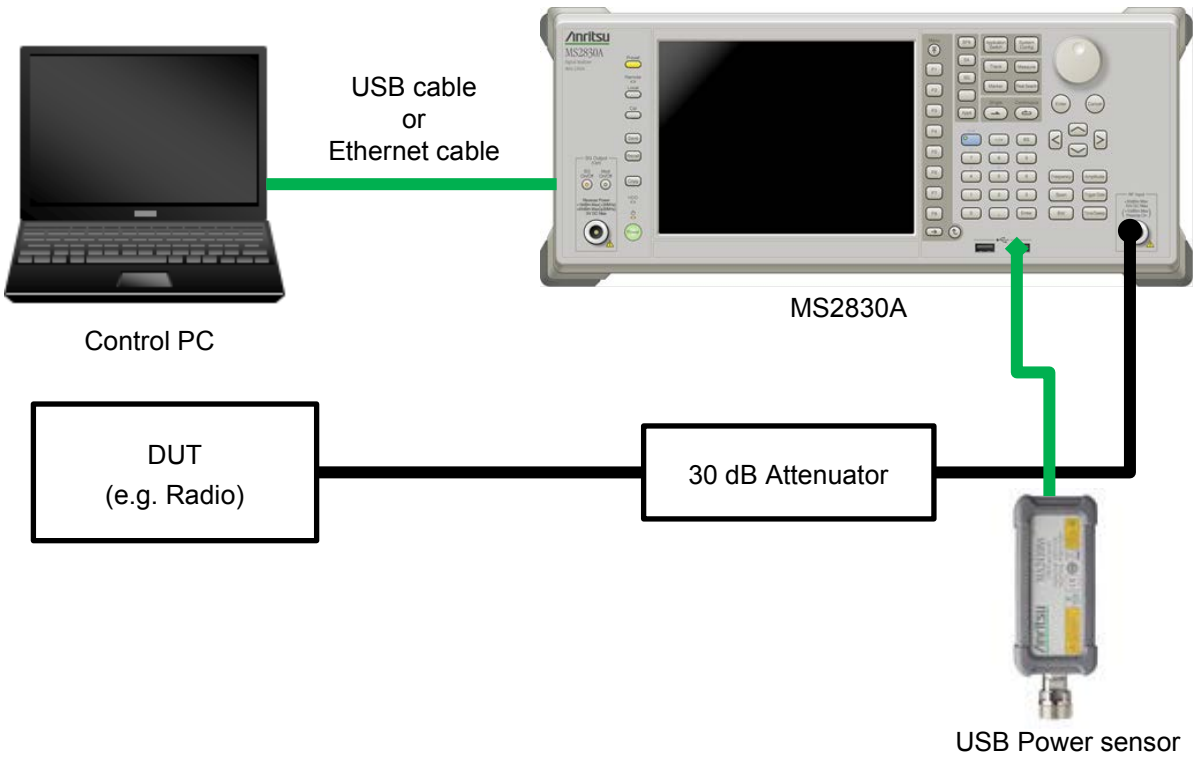
■ Hardware required

- USB cable or Ethernet cable
- Attenuator, Power divider, Coaxial cables for measurement, etc.

■ Software required

- NI-VISA 5.0.3 (Only for operating by control PC. The operation is not verified with other versions.)
- MS2830A firmware Version 7.03.00 or later
  For how to confirm the version of the firmware, refer to 2.5.1 “Version confirmation”.

■ **Connection Example**



Referring to the connection example above, configure the measurement system appropriate for the device you want to test.

Connect the Control PC and MS2830A using a USB or Ethernet cable. For more information, refer to the *MS2690A/MS2691A/MS2692A and MS2830A Signal Analyzer Operation Manual (Mainframe Remote Control)*.

If the output power of the DUT is greater than 10 mW, be sure to use an attenuator.

2.1.2 Operating on MS2830A

The following items are required when you operate this software on MS2830A.

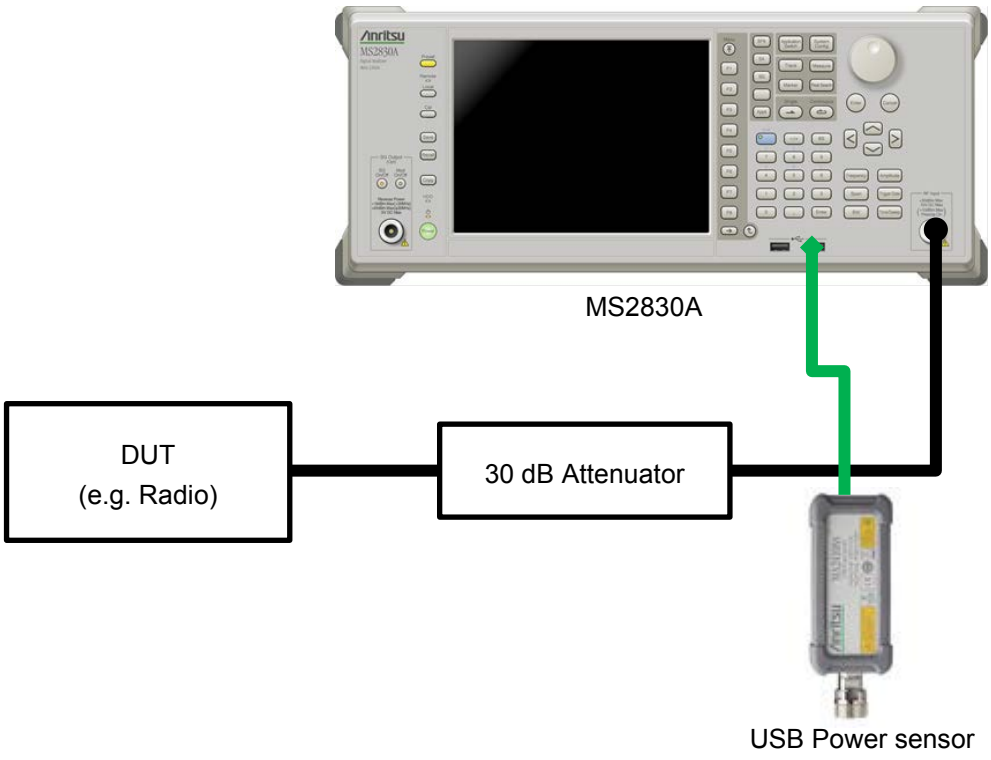
■ Hardware required

- Attenuator, Power divider, Coaxial cables for measurement, etc.
- USB Mouse

■ Software required

- MS2830A firmware Version 7.03.00 or later
  For how to confirm the version of the firmware, refer to 2.5.1 “Version confirmation”.

■ Connection Example



Referring to the connection example above, configure the measurement system appropriate for the device you want to test.

If the output power of the DUT is greater than 10 mW, be sure to use an attenuator.

2.2 Installing licenses

If you purchase the MX269057A (product version) separately from the mainframe, a license key of the MX269057A should be installed on the MS2830A before starting to use.

For how to install licenses, refer to Section 3.8 “Installing and Uninstalling” in the *MS2830A Signal Analyzer Operation Manual (Mainframe Operation)* .

2.3 Installation/Uninstallation Procedure

This section describes how to install this software according to the Setup Wizard.

If resident antivirus program is running on your PC, exit them before activating the setup program, as well as other Windows applications in progress.

Note:

This software requires you to have installed Microsoft .Net Framework 4.0. The installer of this software contains Microsoft .Net Framework 4.0 (version 4.0.30319).

2.3.1 Installation procedure

Follow the procedure below to install this software on the hard disk of your PC or MS2830A.

<Procedure>

1. Copy the Installer of this software, "setup.exe" file onto the desktop of the PC or the MS2830A. Double-click the "setup.exe" file.*

   *: The Installer is common between the Free version and Product version (MX269057A).

2. If Microsoft .Net Framework 4 is not installed, the installation of Microsoft .Net Framework 4 Setup starts automatically.

   The License Agreement screen is displayed. Read the license agreement terms, and click the **Yes** button if you agree with the contents.

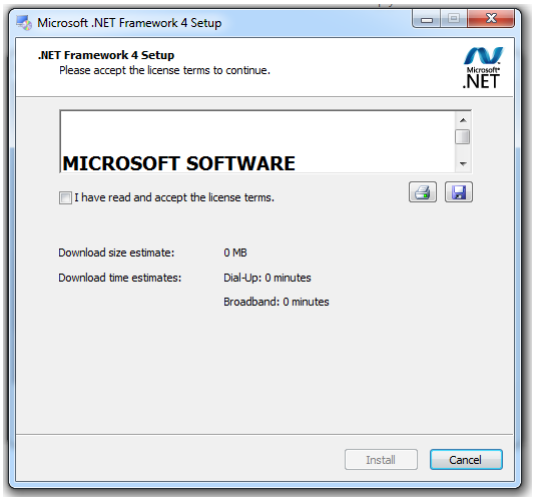


Figure 2.3.1-1 Installation of the Microsoft .Net Framework 4

3. When Microsoft .Net Framework 4 version 4.0.30319 or later has been already installed, start the installation of this software.

   To check the version information of Microsoft .Net Framework 4, click **Control Panel**, and then click **Uninstall a program**.

4. In the License Agreement screen, read the license terms, and then click the **Yes** button to accept the license terms and continue.
5. When "**Install Complete**" is displayed, click the **Finish** button.

2.3.2 Upgrade procedure

Follow the procedure below to upgrade this software.

The upgrade process is run by double-clicking the setup.exe file for the later version than the version currently installed on your PC.

<Procedure>

1 Double-click the setup.exe file in the folder where this software is stored. To install using **the setup disk** for this software, double-click the setup.exe file stored in the \AutoMeasure\Digital folder on **the setup disk**.

2. When you see the following message after this software setup program starts, click the **Yes** button: "This setup will perform an upgrade of 'Anritsu Digital F&D Radio Automatic Measurement'. Do you want to continue?"
3. When you see the following message, click the **Next** button to start upgrade: "Resuming the InstallShield Wizard for AutoMeasure"
4. When you see the following message, click the **Finish** button: "Update Complete"

2.3.3 Uninstallation procedure

Follow the procedure below to uninstall this software from the hard disk of your PC.

<Procedure>

1. On the Windows task bar, click the **Start** button, and then click **Control Panel**.
2. Double-click **Programs and Features**.
3. In the **Uninstall or change a program** dialog box, double-click **Anritsu Digital F&D Radio Automatic Measurement** in the list of currently installed programs.
4. When you see the following message, click the **OK** button to start uninstall: "Are you sure you want to completely remove 'Anritsu Digital F&D Radio Automatic Measurement'."
5. When "Uninstall Complete" is displayed, click the **Finish** button.

Note:

When uninstalling the software, a folder is sometimes left. Eliminate a folder manually in that case.

2.4 NI-VISA Installation procedure

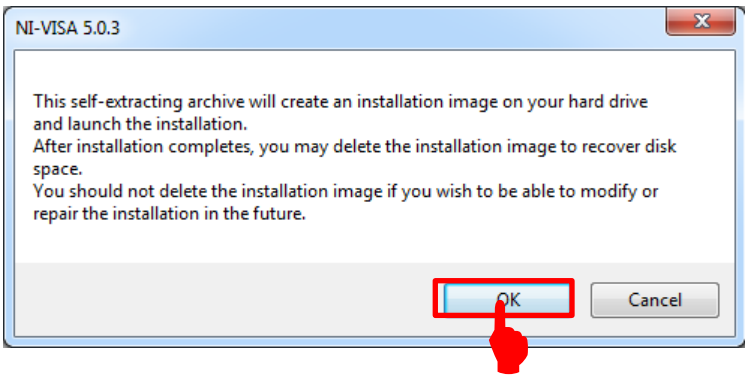
When you want to install this software to a PC, you need to install NI-VISA 5.0.3 or later to the PC. This procedure is not required when installing to MS2830A.

NI-VISA 5.0.3 is stored in the DVD provided with the MS2830A as standard equipment.*
The operation is not verified with other versions.

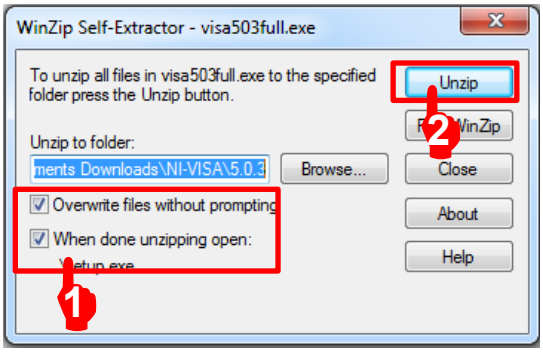
*: NI-VISA 5.0.3 is not stored in the DVDs shipped before May 7, 2015. But you can download it from the below site of National Instruments.
http://www.ni.com/downloads/ni-drivers/ja/

<Procedure>

1. Double-click the setup.exe file in the folder where the files of the NI-VISA are stored. When installing the NI-VISA using **the setup disk**, double-click the "visa503full.exe" file in the \AutoMeasure\NI-VISA directory of **the setup disk**. When you see the following message, click the **OK** button.

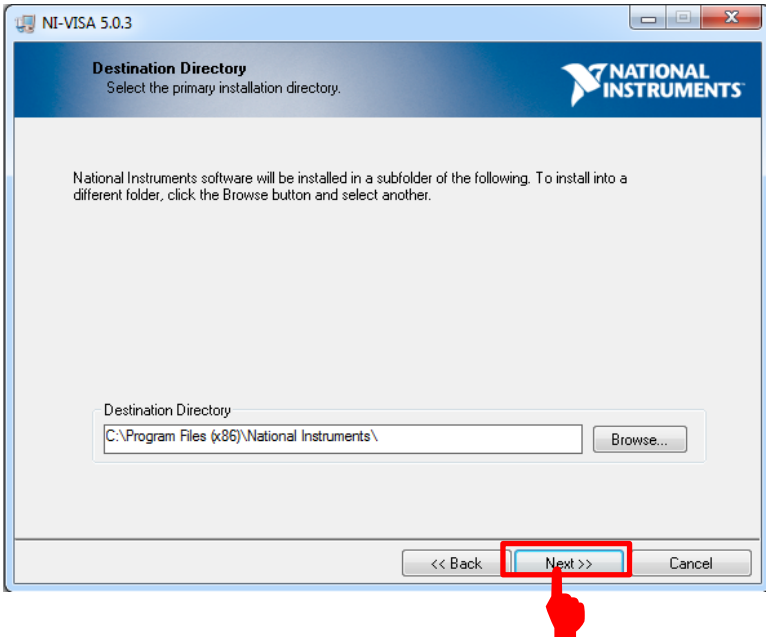


2. When you see the following screen, make sure the **Overwrite files without prompting** and **When done unzipping open** check boxes (1) are selected, and then click the **Unzip** button.

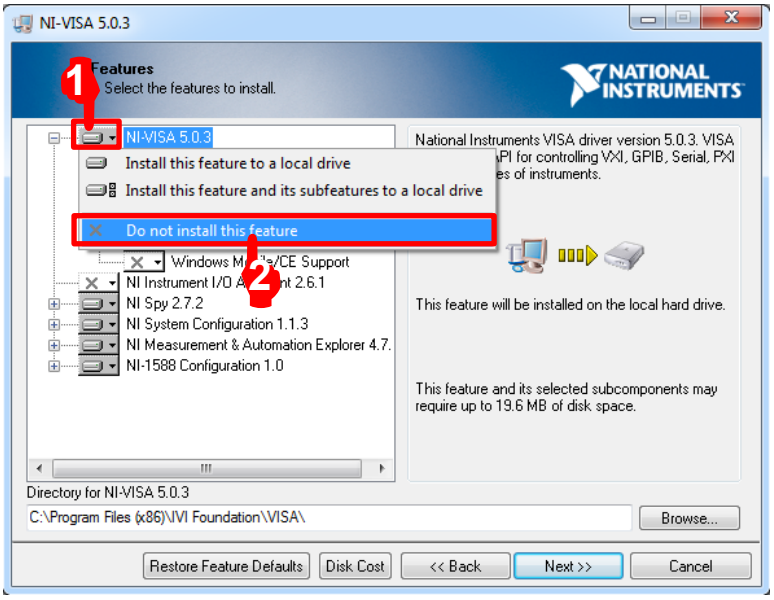


3. When you see the following screen, click the **Next** button.

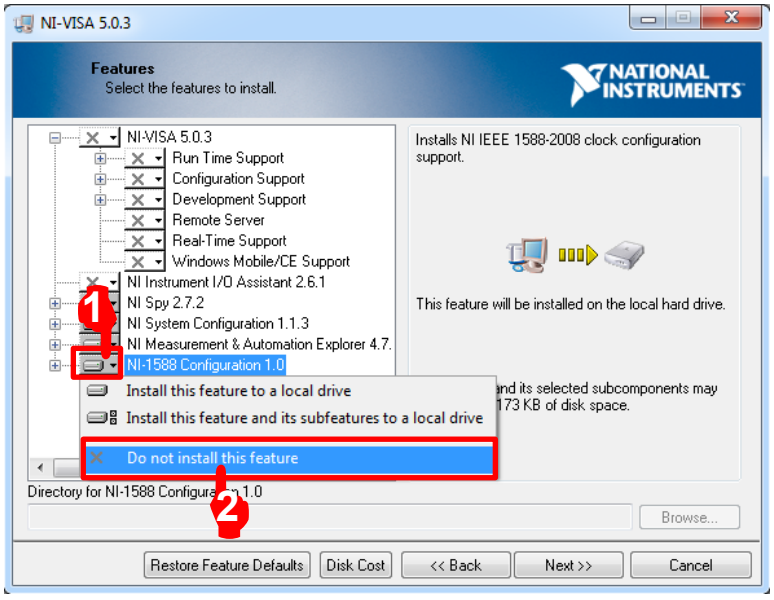
4. When you see the following screen, click the **Next** button.



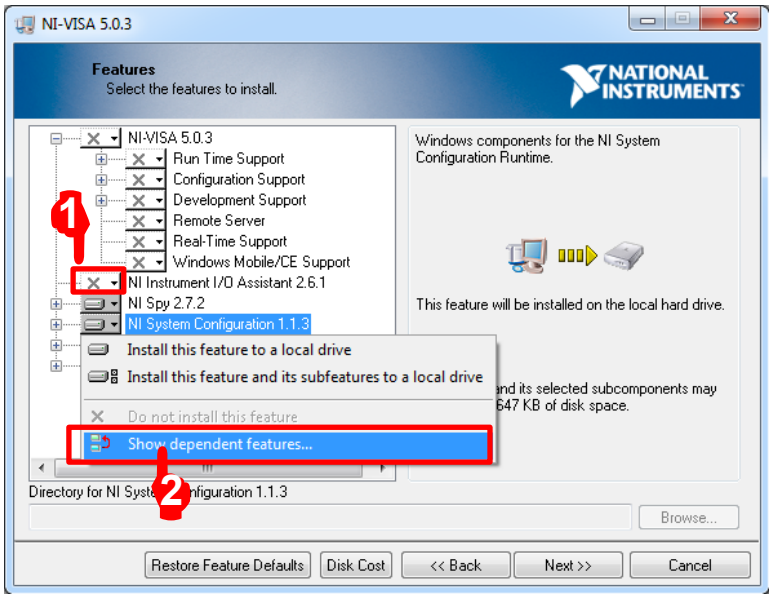
5. When you see the following screen, click the icon (1) on the left side of the "NI-VISA 5.0.3", and click the (2) **Do not install this feature**.



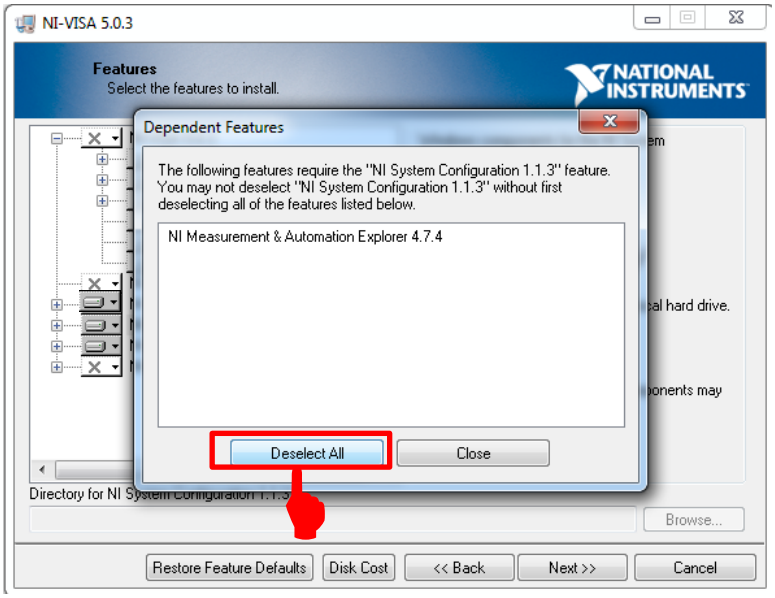
6. When you see the following screen, click the icon (1) on the left side of the "NI-1588 Configuration 1.0", and click the (2) **Do not install this feature**.



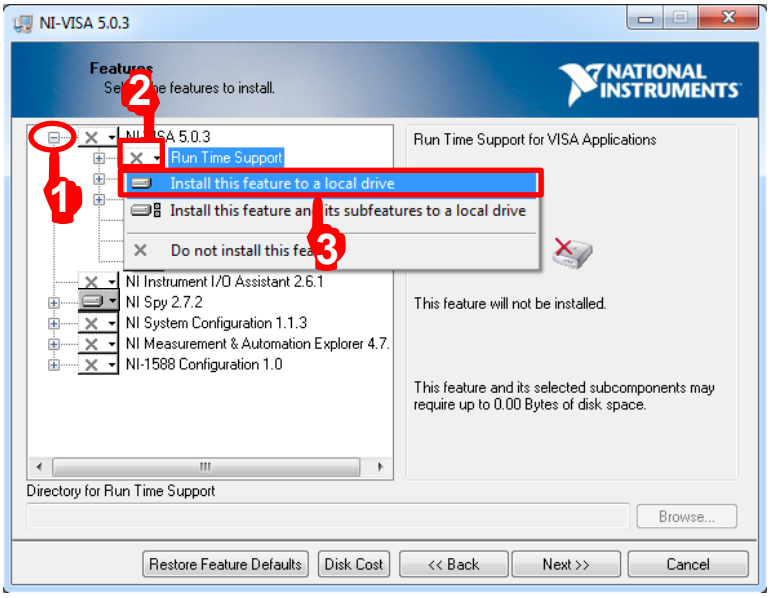
7. When you see the following screen, click the icon (1) on the left side of the "NI System Configuration 1.1.3", and click the (2) **Show dependent feature...**.



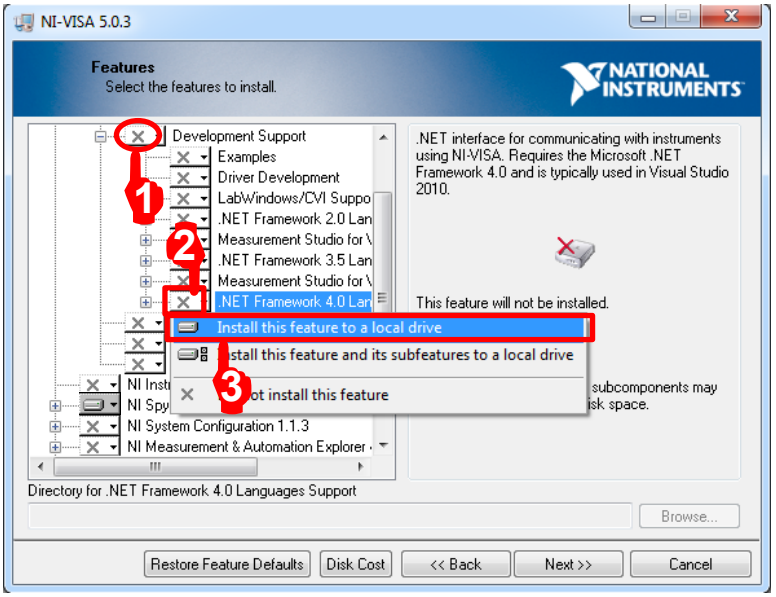
8. When you see the following screen, click the (2) **Deselect All** button.



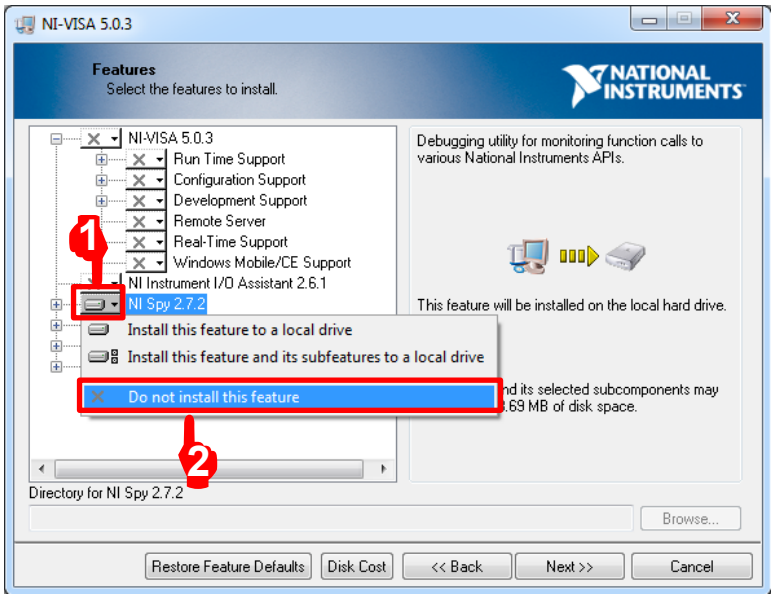
9. Click the (1) **[+]** on the left side of the "NI-VISA 5.0.3."
Click the icon (2) on the left side of the "Run Time Support"
Click the (3) **Install this feature to a local drive**.



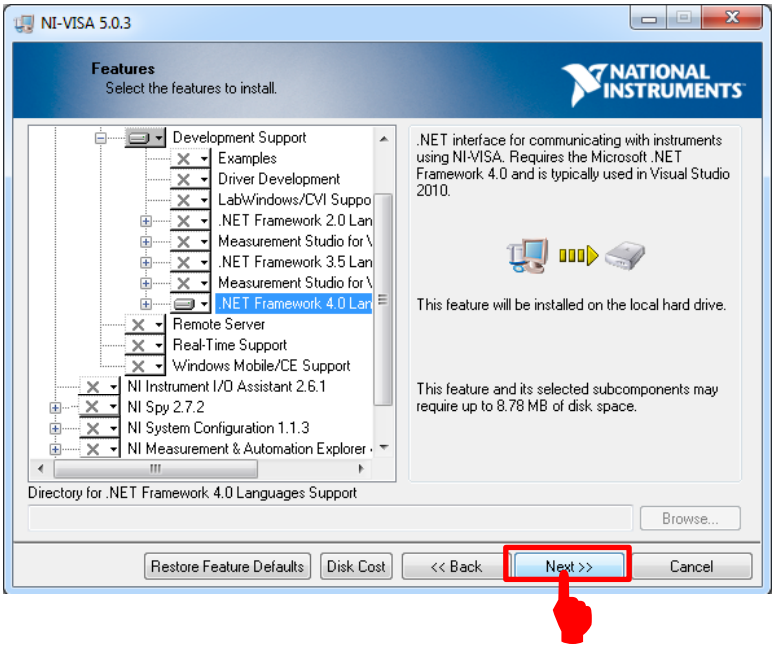
10. Click the (1) **[+]** on the left side of the "Development Support".
Click the icon (2) on the left side of the ".NET Framework 4.0 Languages Support".
Click the (3) **Install this feature to a local drive**.



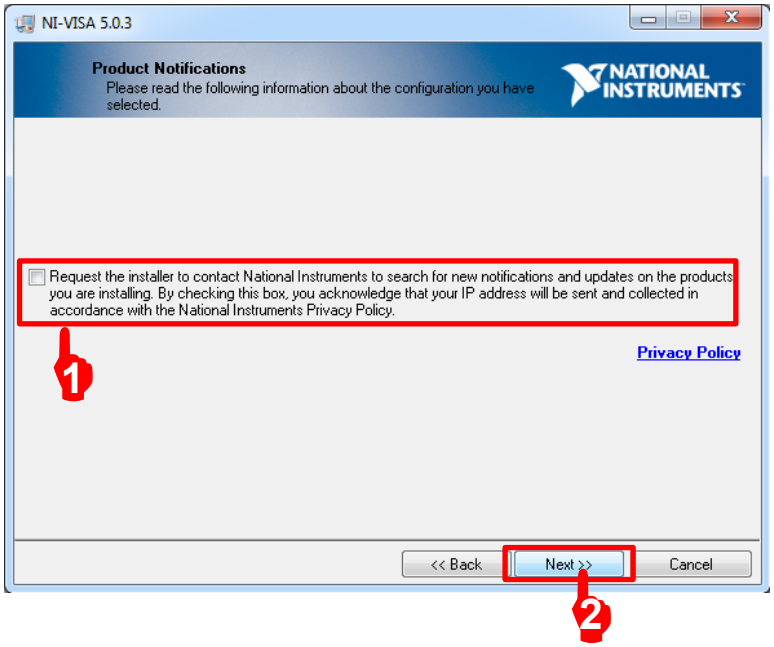
11. When you see the following screen, click the icon (1) on the left side of the "NI Spy 2.7.2", and click the (2) **Do not install this feature**.



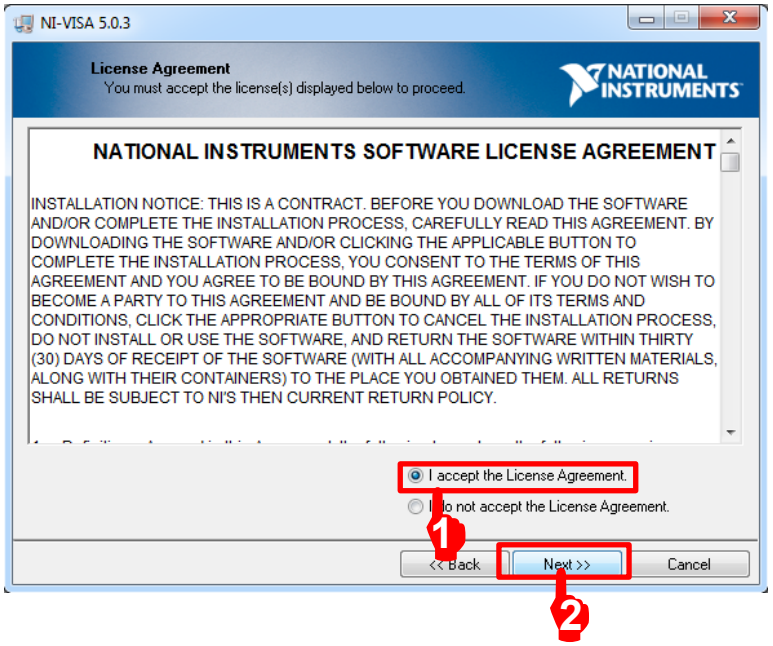
12. When you see the following screen, click the **Next** button.



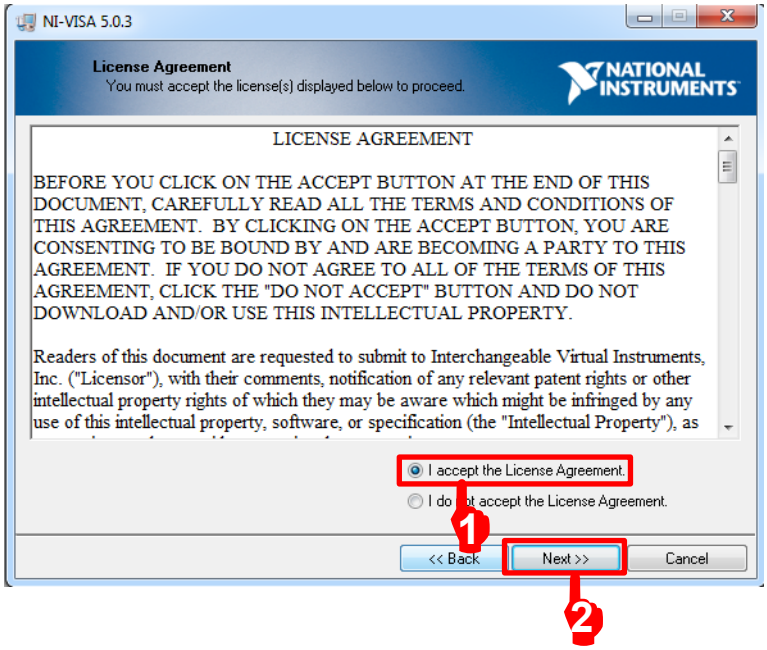
13. When you see the following screen, read the following message (1), select the check box if required, and then click the (2) **Next** button.



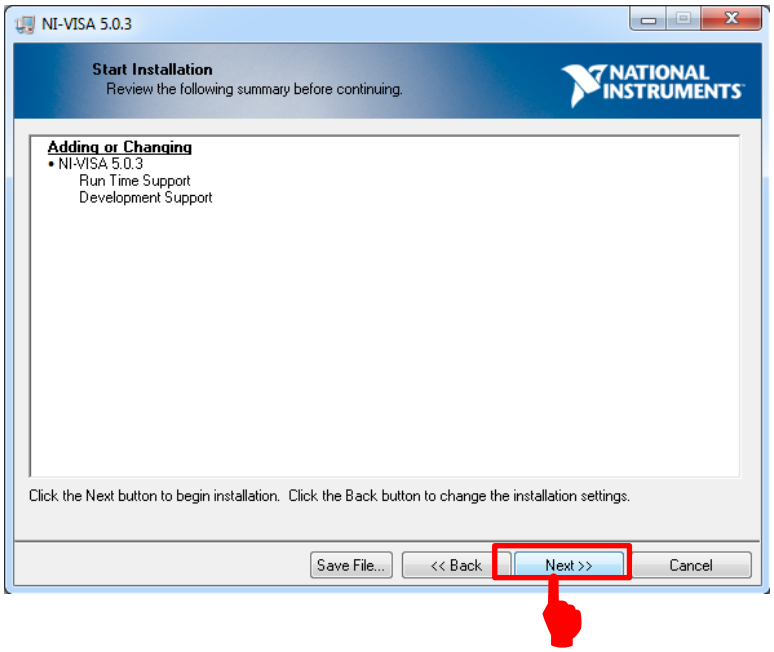
14. When you see the NATIONAL INSTRUMENTS SOFTWARE LICENSE AGREEMENT, select the (1) **I accept the License Agreement**, and click the **Next** button.



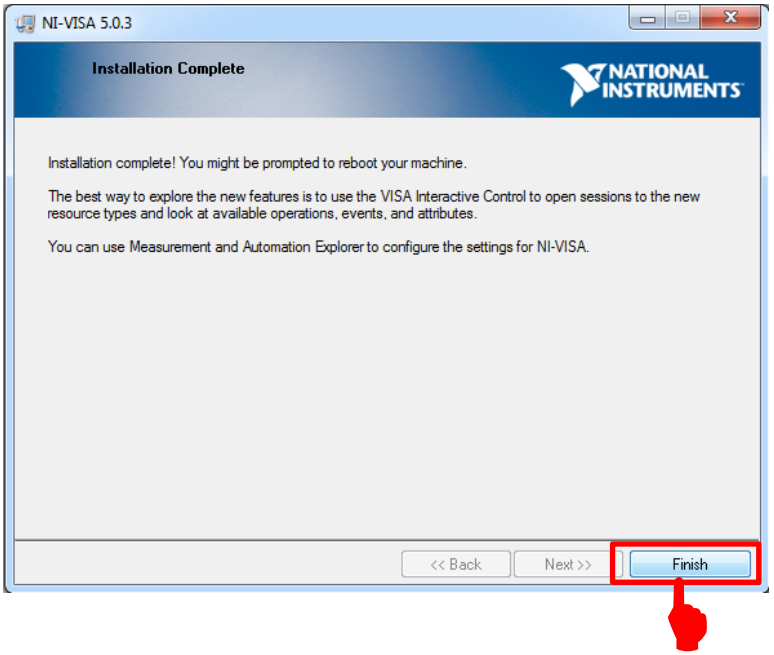
15. When you see the LICENSE AGREEMENT, select the (1) **I accept the License Agreement**, and click the (2) **Next** button.



16. When you see the following screen, click the **Next** button to start the installation.



17. After installation completion, click the **Finish** button.



Now, the NI VISA driver has been successfully installed.
Delete the visa503full.exe file copied on the desktop and restart the PC. .

2.5 Preparations of MS2830A

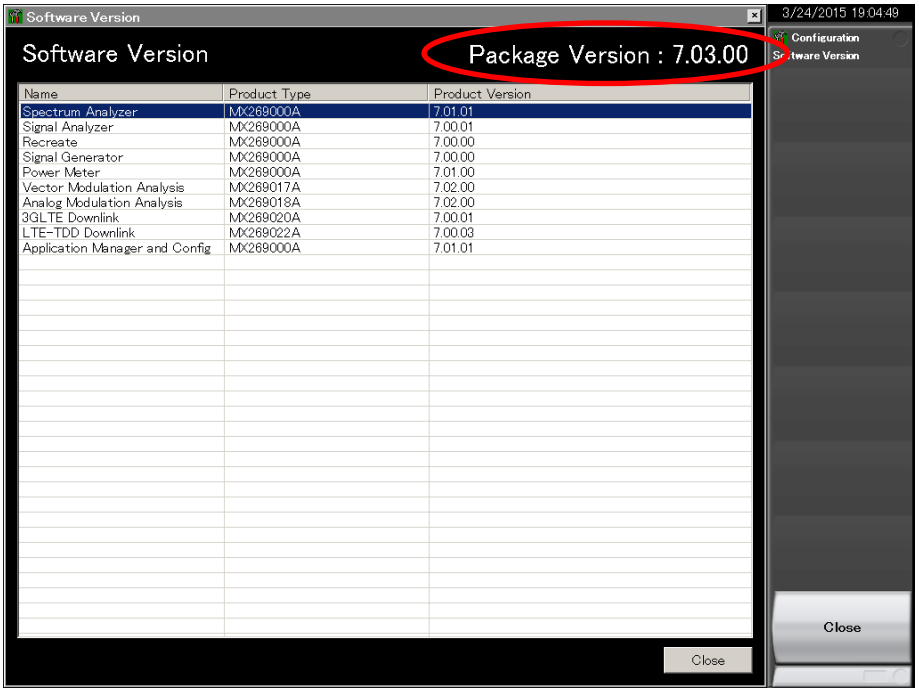
2.5.1 Version confirmation

Press the **System Config** key, press **F5 System Information**, and then press **F2 Software Version View**.

Confirm that the Package Version is 7.03.00 or later.

If the firmware version is older than 7.03.00, upgrade it to the latest version.

For how to install the latest version, refer to the *MS2830A Signal Analyzer Operation Manual Mainframe Operation,* 3.8.1 “Installing software”.



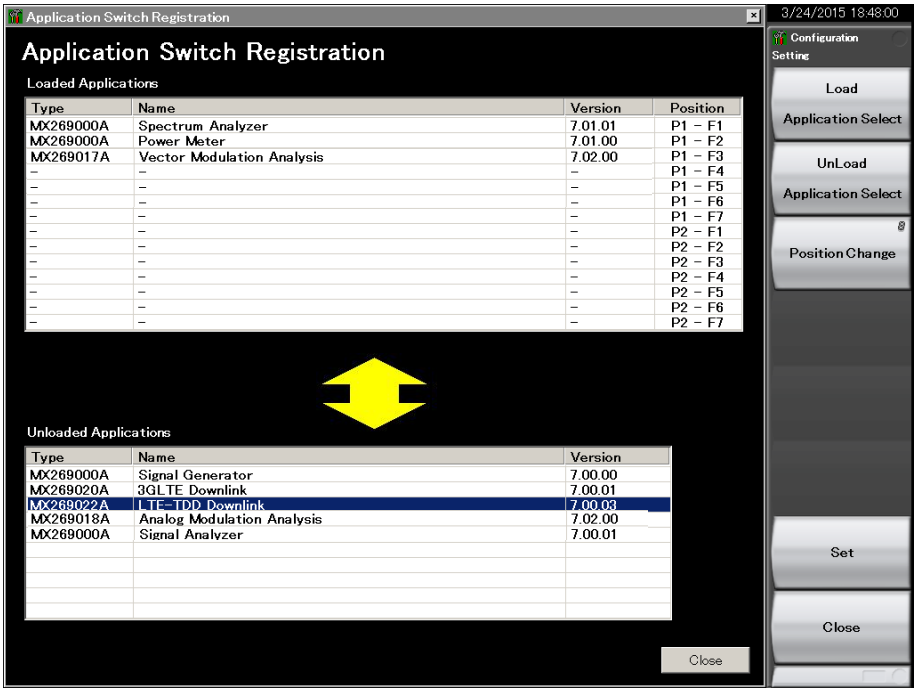
2.5.2 Loading applications

1. Press the **System Config** key, and press **F4 Application Switch Setting**, and then press **F1 Load Application Select**.
2. Select the following applications by the rotary knob, and press the **Enter** key to load.

Loading multiple applications causes an increase in CPU load, and thus results in a startup delay when powering on. Uninstalling unnecessary applications is recommended.

The applications are controlled automatically during execution of this software. Do not change the parameters of the applications.

Type	Name
MX269000A	Spectrum Analyzer
MX269000A	Power Meter
MX269017A	Vector Modulation Analysis



2.5.3 Calibration

Press the **Power** switch, and then warm up MS2830A for at least 30 minutes before calibration.

Calibration takes about 30 seconds. If the MS2830A-077/078 Analysis Bandwidth Extension Hardware is installed, calibration takes about 2 minutes.

1. Make sure that no signal is input to the RF Input terminal.
2. Press the **Application Switch** key, and then press **F1 Spectrum Analyzer**.
3. Press the **Cal** key, and then press **F1 SIGANA All** to start the calibration process. The following progress bar is displayed while the calibration is in progress.

Chapter 3 Measurement

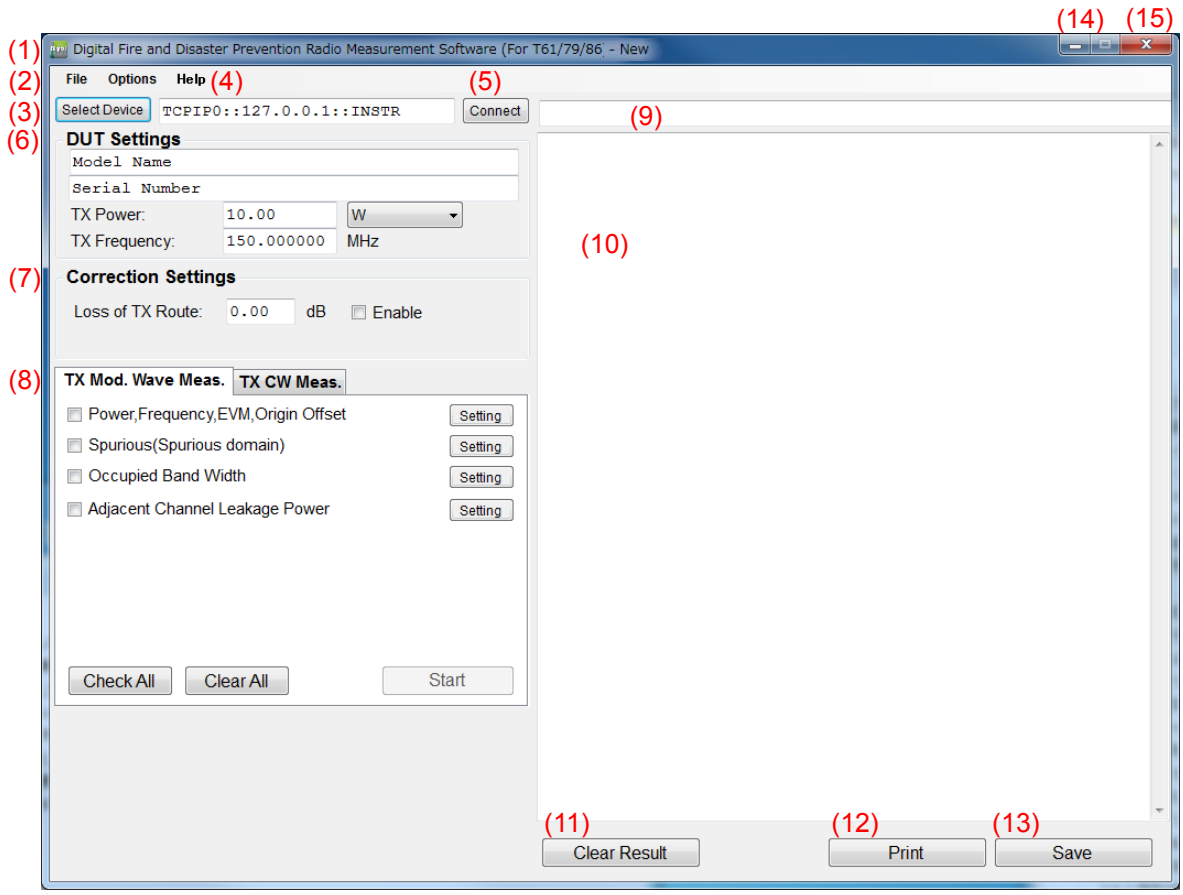
This section describes the measurement function, the parameter contents, the setting methods and the measurement results for this software.

3.1 Automatic Measurement Software

You can start this software using one of the following procedures.

On the taskbar, click the **Start** button, point to **All Programs**, click **Anritsu Corporation**, click **AutoMeasure**, and then click **DigitalAutoMeasurement**.

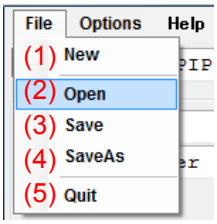
3.1.1 Initial screen

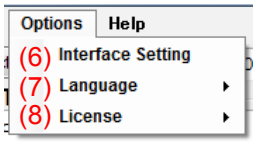


No.	Item	Description
1	Digital Fire and Disaster Prevention Radio Measurement Software (for T61/79/86)-New	Software name - Parameter file name The parameter file name is displayed only when the software you are using is MX269057A. Default: New
2	File, Options, Help	Pulls down the file, Options, Help menu. Refer to 3.1.2 Menu bar
3	Select Device	When installed on the Control PC: Displays the dialog box where you can select a destination address. When installed on MS2830A: Grayed (unavailable) Refer to 3.1.4 Connecting with MS2830A
4	(Text box)	Displays the address selected in the **VISA Setting** dialog box. When installed on MS2830A: Grayed (unavailable)
5	Connect	Connects to MS2830A from this software installed on the Control PC. Refer to 3.1.4 Connecting with MS2830A Refer to 3.1.5 Disconnecting with MS2830A
6	DUT Settings	Sets the parameters of the DUT. Refer to 3.2.1 DUT settings
7	Correction Settings	Sets the correction. Refer to 3.3 Correction Settings
8	TX Mod Wave Meas. /TX CW Meas.	Toggles between the **TX Mod Wave Meas** tab and **TX CW Meas** tab. Refer to 3.4 TX Modulation Wave Measurement Refer to 3.5 Setting TX CW Measurement
9	Status area (Text box)	Displays Measurement status and Error messages. Refer to 3.7 Status Messages
10	Measurement result area (Text box)	Displays the measurement results. Refer to 3.6 Measurement, Results
11	Clear Result	Clears, Prints, Saves the measurement results. Refer to 3.6.11 Clearing/printing/saving the measurement results
12	Print	
13	Save	
14		Minimizes this software window.
15		Exits this software. The parameter settings are saved automatically when exiting this software.

3.1.2 Menu bar

The menu bar contains the following submenus.

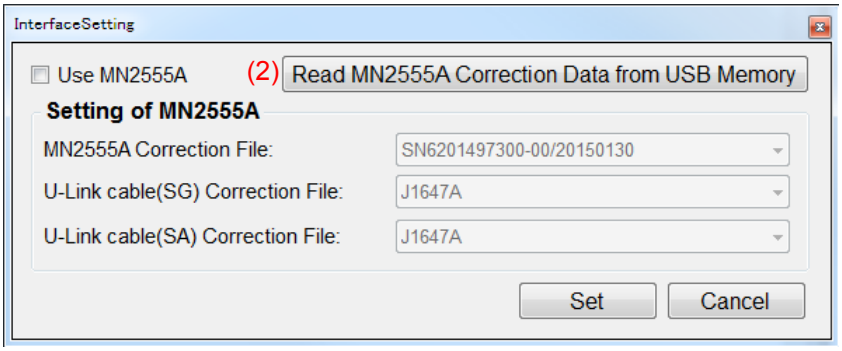




No.	Item		Description
1	File	New	All measurement items are made defaults.
2		Open	Available only for MX269057A. Reads the parameter file.
3		Save	Available only for MX269057A. Saves the parameter file. File name: Params_yyyymmdd_hhmmss.xml (Default)
4		Save As	Available only for MX269057A. Names the parameter file and saves it.
5		Quit	Exits the software. The parameter settings are saved automatically when exiting this software.
6	Options	Interface Setting	Displays the **Interface Setting** dialog box. Refer to 3.1.3 Interface settings
7		Language	Selects the language. It's necessary to change the language before measurement execution. English: Language: English (Default) Japanese: Language: Japanese
8		License	Selects the license. ***Note:*** When connecting to MS2830A without a purchased license, only **Free** is available as the license option. With a purchased license, either **Product** or **Free** can be selected. Product Version: Product license (Default) Free Version: Free license
9	Help	About this software	Displays the Version information etc..

3.1.3 Interface settings

When using MN2555A, copy the correction data from the USB memory stick that comes with MN2555A, and then load it.



No.	Item	Description
	Interface Settings	
1	Use MN2555A	Sets the usage of MN2555A. Check the box: Uses MN2555A Uncheck the box: Does not use MN2555A (Default)
2	Read MN2555A Correction Data from USB Memory	Loads the MN2555A correction data from the connected USB memory stick.
	Setting of MN2555A	
3	MN2555A Correction File	Serial Number / Date of calibration In the list of the correction data loaded from the USB memory stick that comes with MN2555A, select a correction data file that is appropriate to your MN2555A (serial number and date of calibration).
4	U-Link cable(SG) Correction File	Displays the U-Link cable(SG) Correction file list. Selects from the indicated list. Default: J1647A
5	U-Link cable(SA) Correction File	Displays the U-Link cable(SA) Correction file list. Selects from the indicated list. Default: J1647A

Note:

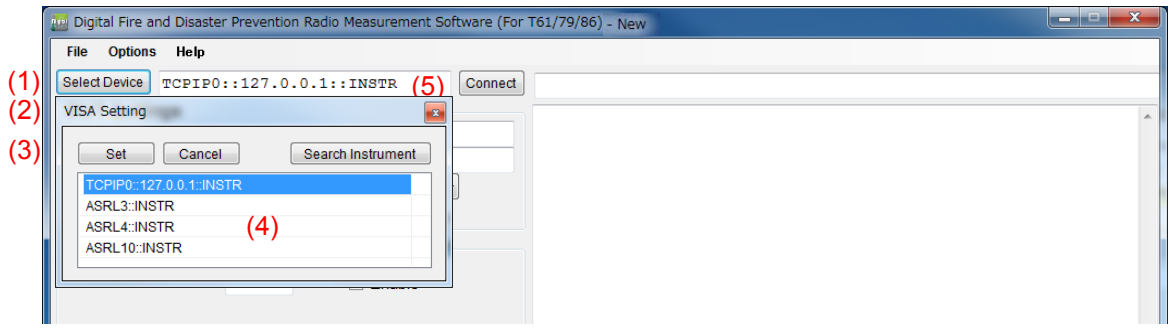
These settings will not be saved in the parameter file.

3.1.4 Connecting with MS2830A

To control MS2830A by using the Control PC, you need to connect this software to MS2830A before measurement. This section describes how to connect this software to MS2830A.

<Procedure>

1. To control MS2830A using the Control PC, click (1) **Select Device** to open the (2) **VISA Setting** dialog box.
2. To control MS2830A using the Control PC, select a communication interface (4), and then click (3) **Set**.
   This step is not required if this software is used on MS2830A.
3. Click (5) **Connect**. When the interface connection is established, the background color of **Connect** turns green.



3.1.5 Disconnecting with MS2830A

To control MS2830A using control software other than this software, disconnect the connection to MS2830A, in advance, according to the following procedure.

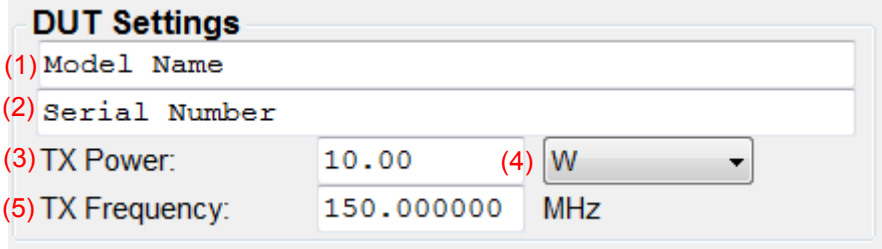
Click **Connect** displayed on a green background.
Then, the connection to MS2830A is disconnected and the background color of **Connect** returns to normal.

3.2 Setting Common Items

This section describes how to set the parameters that are common to all measurement items.

3.2.1 DUT settings

This section describes how to set the parameters for the Device under test (DUT).



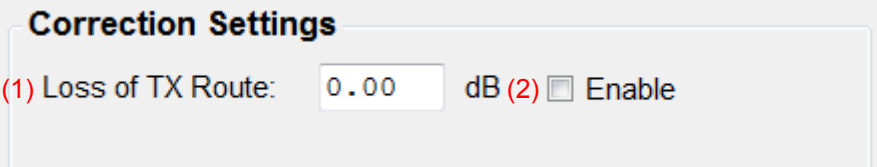
Configure the parameter settings according to the table below.

No.	Item	Description
	DUT Settings	
1	(Text box)	Inputs the model name of DUT. Characters: Up to 50 characters Default: Model Name
2	(Text box)	Inputs the serial number of DUT. Characters: Up to 50 characters Default: Serial Number
3	Tx Power	Sets the Tx power of DUT. Range: 1 µW to 100 W (Converted value) Default: 10.00
4	(Menu)	Selects the unit of Tx Power. Options: dBm, W, mW Default: W
5	Tx Frequency	Sets the Tx frequency of DUT. Range: 31 to 990 MHz, 1010 to 2000 MHz Default: 150.000000 MHz

3.3 Correction Settings

This section describes how to set the path loss between MS2830A and DUT (radio device).

■ Uncheck the [Use MN2555A] box



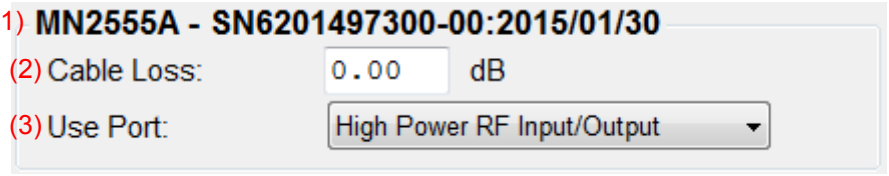
The following path loss value is reflected to measurement results.

No.	Item	Description
	Correction Settings	
1	Loss of TX Route	Sets the path loss between antenna terminal of DUT (radio device) and RF input terminal of MS2830A. Range: –50 to 50 Default: 0.00 dB
2	Enable	Sets whether to reflect the value set in the **Loss of TX Route** box to measurement results. Check the box: Reflects. Uncheck the box: Does not reflect. (Default)

Note:

These settings will not be saved in the parameter file.

■ Check the [Use MN2555A] box



No.	Item	Description
1	MN2555A - SN6201497300-00: 2015/01/30	Displays the correction data information (Model name, Serial number, Calibration date of Duplexer box) set in the **Interface Setting** dialog box.
2	Cable Loss	Sets the path loss between antenna terminal of DUT (radio device) and terminal of the Duplexer Box. Range: –50 to 50 Default: 0.00 dB
3	Use Port	Selects the using port of Duplexer box. Options: High Power RF Input/Output (Default) Low Power RF Input/Output

Note:

These settings will not be saved in the parameter file.

3.4 Setting TX Modulation Wave Measurement

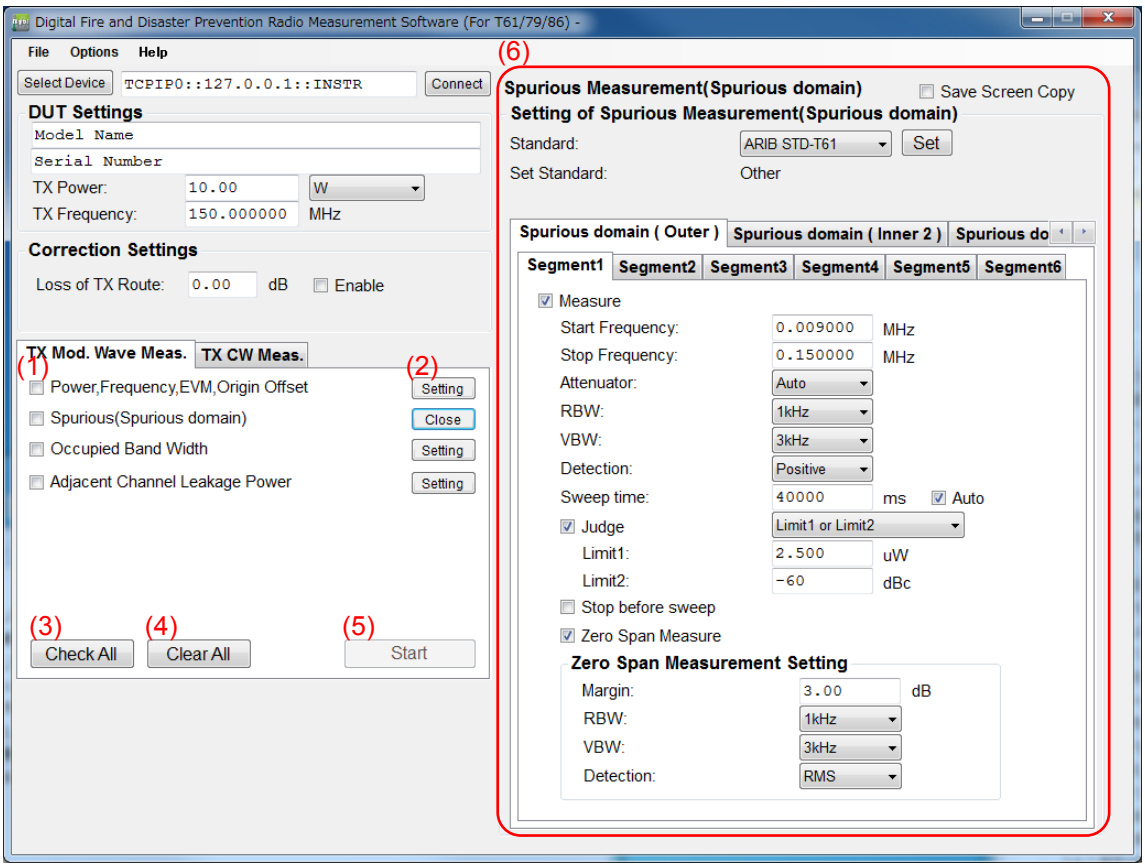
Before starting measurement, you need to select the measurement items and set the parameters. This section describes how to set the parameters for TX modulation wave measurement.

3.4.1 Selecting TX Modulation Wave Measurement items

This section describes how to select a measurement item(s) to be included in Tx modulation wave measurement. Only the measurement item(s) selected here will be measured.

Note:

Some of the measurement items cannot be measured unless the other measurement item(s) is(are) complete. In this case, the check box(es) for the required measurement item(s) will be selected automatically.

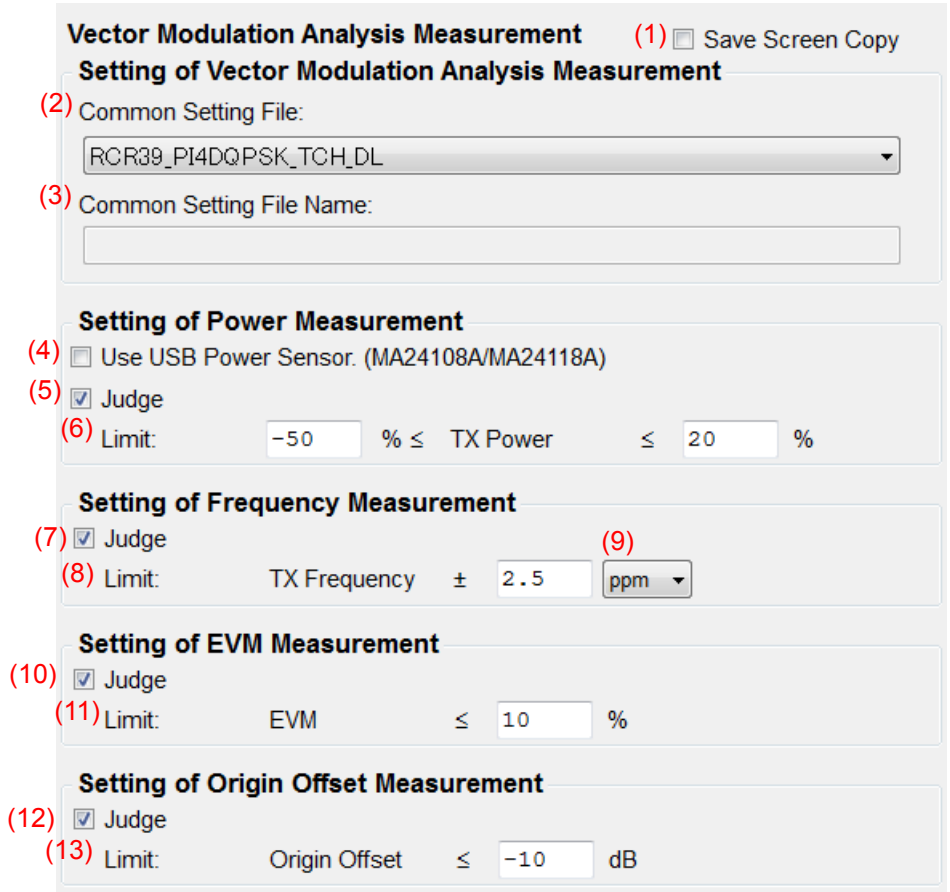


No.	Item	Description
1	(Check box)	Select the check box(es) for the Tx measurement (modulation) item(s) you want to test. Default: All off
2	Setting/Close	Displays/hides the detailed settings for the measurement item in the display area.
3	Check All	Sets all Tx measurement check boxes to On.
4	Clear All	Sets all Tx measurement check boxes to Off.
5	Start	Performs the selected measurement item(s) sequentially. Measurement cannot be started until this software is successfully connected to MS2830A. Refer to 3.1.4 Connecting with MS2830A
6	Display area	Displays the detailed settings for the measurement item if the caption on the button (2) is **Setting**. Hides them if the caption is **Close**.

3.4.2 Vector Modulation Analysis Measurement

This section describes how to set the Vector Modulation Analysis Measurement parameters.

By using the MX269017A Vector Modulation Analysis Software, the modulation analysis measurement is performed, and then the TX power, TX frequency, modulation accuracy, and origin offset are measured.



To save any changes you make to the settings, click **Close**.

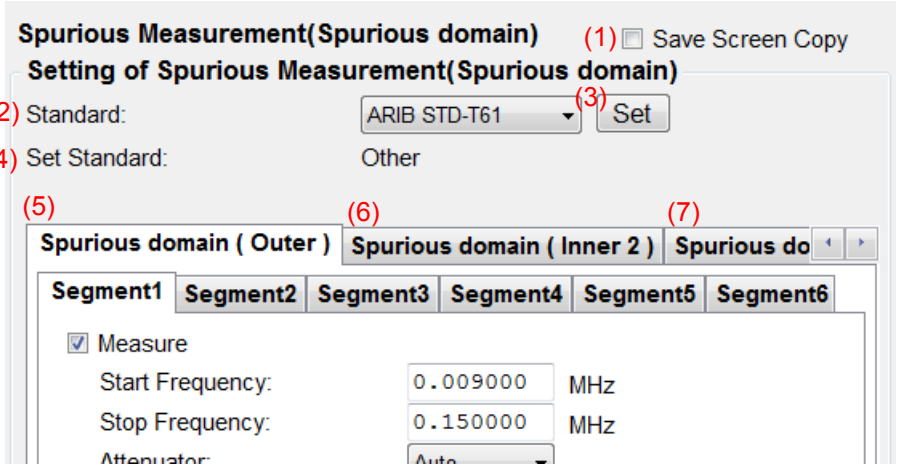
No.	Item	Description
	Vector Modulation Analysis Measurement	
1	Save Screen Copy	Sets whether to save a screen shot of MS2830A. The screen shot is saved to MS2830A. Check the box: Save Uncheck the box: Does not save (Default)
	Setting of Vector Modulation Analysis Measurement	

No.	Item	Description
2	Common Setting File	In the list box, select a Common Setting file that contains the common parameter settings you want to use on the MX269017A Vector Modulation Analysis Software. RCR39_PI4DQPSK_TCH_UL RCR39_PI4DQPSK_TCH_DL (Default) T61_SCPC_v1_0_SC T61_SCPC_v1_1_40ms_SC T61_SCPC_v1_1_20ms_SC T61_FDMA_PSC_UL T61_FDMA_PSC_DL T86_CCH_UL T86_CCH_DL T86_TCH_UL T86_TCH_DL User File (Available only when the software you are using is MX269057A.)
3	Common Setting File Name	Enter the name of the User file that contains the common parameter settings you want to load to use on the MX269017A Vector Modulation Analysis Software. This box is available only if both of the following conditions are met: • The software you are using is MX269057A. • **User File** is selected in the **Common Setting File** box. Specify the name of the Common Setting file you saved to the following directory on MS2830A. D:\Anritsu Corporation\Signal Analyzer\User Data\Parameter Setting\VMA\Dialog Param For how to save parameters, refer to 3.4.2 “Parameter Save/Recall” in the *MX269017A Vector Modulation Analysis Software Operation Manual Operation*. Characters: Up to 50 characters
	Setting of Power Measurement	
4	Use USB Power Sensor (MA24108A /MA24118A)	Sets whether to use the USB power sensor in Tx power measurement. The supported models are MA24108A and MA24118A. Check the box: Uses USB Power sensor Uncheck the box: Does not use USB Power sensor (Default)
5	Judge	Sets the Pass/Fail evaluation. Check the box: Enabled (Default) Uncheck the box: Disabled
6	Limit	Sets the limit value for Pass/Fail evaluation. Range: –100 to 100% (0 W to twice the setting Tx power) Lower Default: –50% Upper Default: 20%
	Setting of Frequency Measurement	

No.	Item	Description
7	Judge	Sets the Pass/Fail evaluation. Check the box: Enabled (Default) Uncheck the box: Disabled
8	Limit	Sets the limit value for Pass/Fail evaluation. Range: 0 to 100 ppm Default: 2.5 ppm
9	(Menu)	Selects the unit of limit value. Options: ppm, Hz, kHz Default: ppm
	Setting of EVM Measurement	
10	Judge	Sets the Pass/Fail evaluation. Check the box: Enabled (Default) Uncheck the box: Disabled
11	Limit	Sets the limit value for Pass/Fail evaluation. Range: 0 to 100% Default: 10%
	Setting of Origin Offset Measurement	
12	Judge	Sets the Pass/Fail evaluation. Check the box: Enabled (Default) Uncheck the box: Disabled
13	Limit	Sets the limit value for Pass/Fail evaluation. Range: –100 to 0 dB Default: –10 dB

3.4.3 Spurious Measurement (Spurious domain)

This section describes how to set the Spurious Measurement parameters. The spectrum analyzer function is used when measuring spurious emissions.

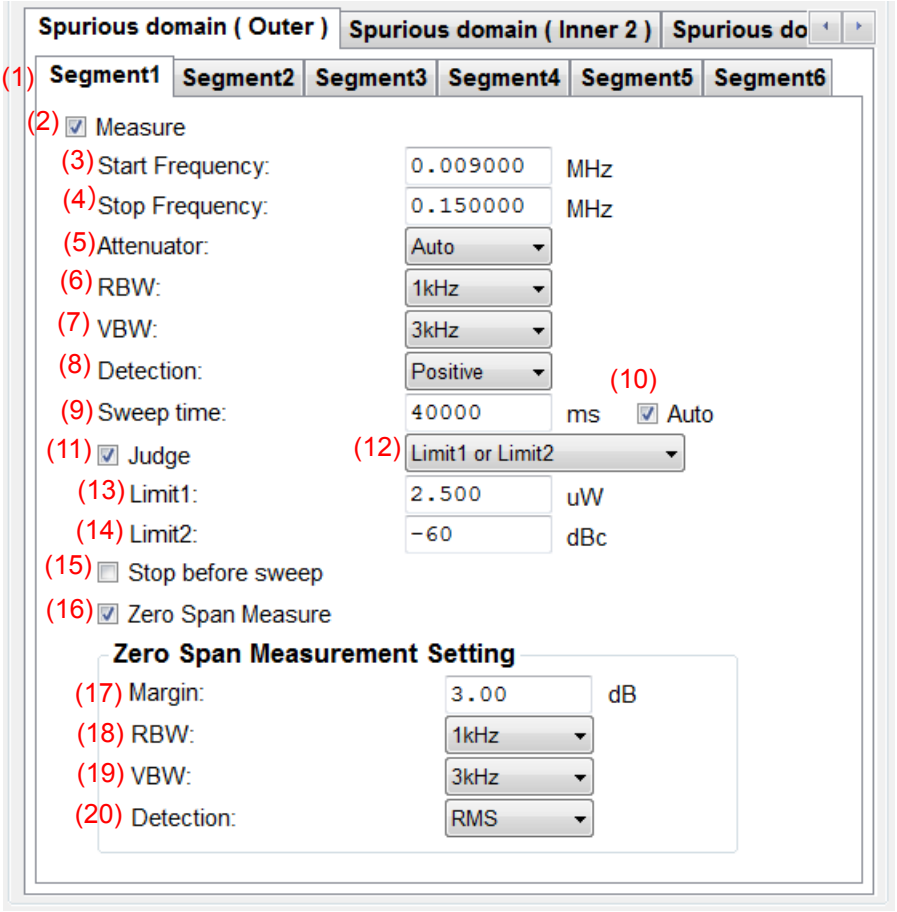


To save any changes you make to the settings, click **Close**.

No.	Item	Description
	Spurious Measurement (Spurious domain)	
1	Save Screen Copy	Sets whether to save a screen shot of MS2830A. The screen shot is saved to MS2830A. Check the box: Save Uncheck the box: Does not save (Default)
	Setting of Spurious Measurement (Spurious domain)	
2	Standard	Select the standard you want to set automatically. Options: ARIB STD-T61, ARIB STD-T79, ARIB STD-T86 Default: ARIB STD-T61
3	Set	Sets each parameter automatically according to the standard selected in the **Standard** box.
4	Set Standard	Displays the standard set automatically. If you make any changes to the settings, the standard name is replaced by "Other".
5	Spurious domain (Outer)	Refer to 3.4.3.1 Spurious domain (Outer)
6	Spurious domain (Inner2)	Refer to 3.4.3.2 Spurious domain (Inner2)
7	Spurious domain (Inner1)	Refer to 3.4.3.3 Spurious domain (Inner1)

3.4.3.1 Spurious domain (Outer)

This section describes how to set the Spurious Measurement parameters for spurious domain (outer).



No.	Item	Description
	Spurious domain (Outer)	
1	Segment 1 to 6	Displays the setting dialog boxes of segment 1 to 6 in Outer.
2	Measure	Sets the measurement. Check the box: Enabled Uncheck the box: Disabled Default: On (Segment 1 to 5), Off (Segment 6)
3	Start Frequency	Sets the start frequency in measurement area. Range: 0.009 to 6000 MHz Default: Refer to Table 3.4.3.1-1
4	Stop Frequency	Sets the stop frequency in measurement area. Range: 0.009 to 6000 MHz Default: Refer to Table 3.4.3.1-1
5	Attenuator	Sets the attenuator in measurement area. Options: Auto, 0, 2, 4, 6, … 58, 60 dB Default: Auto (Segment 1 to 6)

No.	Item	Description
6	RBW	Selects the RBW in measurement area. Options: 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz, 10 MHz Default: Refer to Table 3.4.3.1-1
7	VBW	Selects the VBW in measurement area. Options: 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz, 10 MHz Default: Refer to Table 3.4.3.1-1
8	Detection	Selects the detection in measurement area. Options: Normal, Positive, Negative, Sample, RMS Default: Positive (Segment 1 to 6)
9	Sweep time	Sets the sweep time in measurement area. Range: 1 to 1000000 ms Default: 40000 ms (Segment 1 to 6)
10	Auto	Sets the sweep time mode to auto/manual. Check the box: Auto (Default: Segment 1 to 6) Uncheck the box: Manual
11	Judge	Sets the Pass/Fail evaluation. Check the box: Enabled (Default) Uncheck the box: Disabled
12	(Menu)	Selects the evaluation mode of the limit value. Options: Limit 1, Limit 2, Limit 1 and Limit 2, Limit 1 or Limit 2 Default: Limit 1 or Limit 2 (Segment 1 to 6)
13	Limit 1	Sets the limit value for Pass/Fail evaluation in µW unit. Range: 0.001 to 1000000 µW Default: 2.500 µW (Segment 1 to 6)
14	Limit 2	Sets the limit value for Pass/Fail evaluation in dBc unit. Range: –100 to 0 dBc Default: –60 dBc (Segment 1 to 6)
15	Stop before sweep	Sets whether to pause before sweeping. Check the box: Enabled Uncheck the box: Disabled (Default: Segment 1 to 6)
16	Zero Span Measure	Sets whether to perform power adjustment (zero span) measurement when the measurement doesn't meet the limit. Check the box: Enabled (Default: Segment 1 to 6) Uncheck the box: Disabled
	Zero Span Measurement Setting	
17	Margin	Sets the condition for power adjustment (zero span) measurement. Power adjustment (zero span) measurement is performed if the difference between measured value and limit value is no more than the value set here. Range: 0 to 50 dB Default: 3.00 dB (Segment 1 to 6)

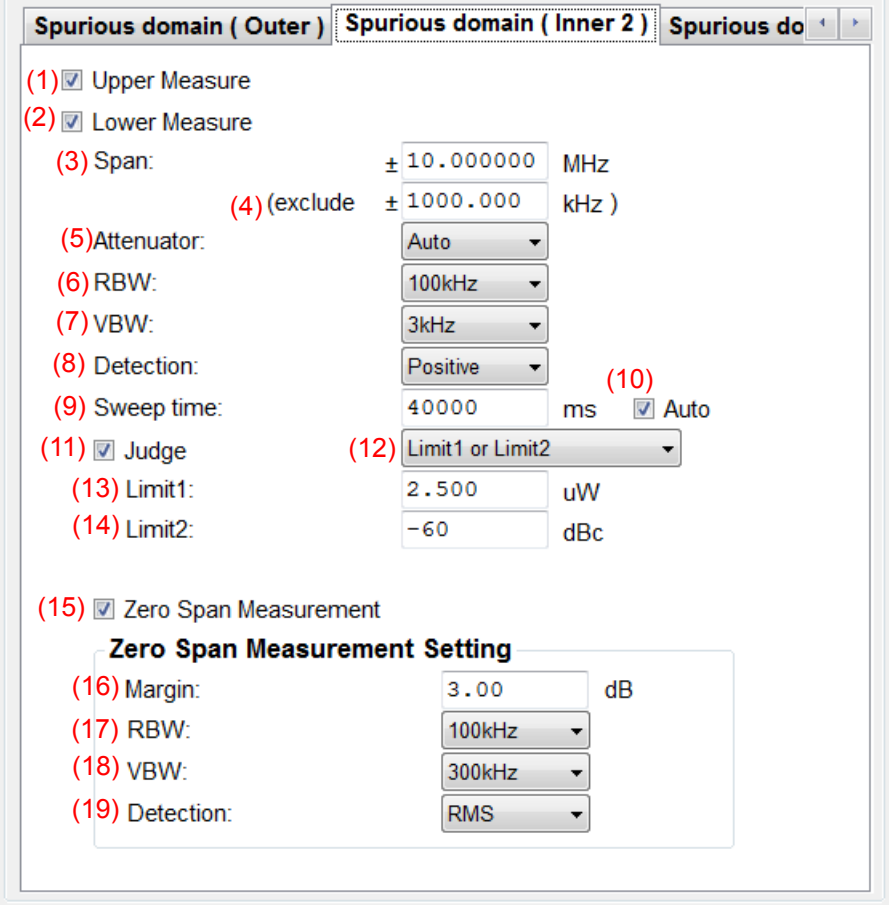
No.	Item	Description
18	RBW	Selects the RBW in Zero Span Measurement. Options: 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz, 10 MHz Default: Refer to Table 3.4.3.1-1
19	VBW	Selects the VBW in Zero Span Measurement. Options: 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz, 10 MHz Default: Refer to Table 3.4.3.1-1
20	Detection	Selects the detection in Zero Span Measurement. Options: Normal, Positive, Negative, Sample, RMS Default: RMS (Segment 1 to 6)

Table 3.4.3.1-1 Default for Spurious domain (Outer)

Segment	Start Frequency (MHz)	Stop Frequency (MHz)	RBW (Hz)	VBW (Hz)	Zero Span Measurement	
					RBW (Hz)	VBW (Hz)
1	0.009000	0.150000	1 k	3 k	1 k	3 k
2	0.150000	30.000000	10 k	3 k	10 k	30 k
3	30.000000	149.000000	1 M	3 k	100 k	300 k
4	151.000000	1000.000000	1 M	3 k	100 k	300 k
5	1000.000000	1500.000000	1 M	3 k	1 M	3 M
6	1500.000000	3600.000000	1 M	3 k	1 M	3 M

3.4.3.2 Spurious domain (Inner2)

This section describes how to set the Spurious Measurement parameters for spurious domain (inner 2).



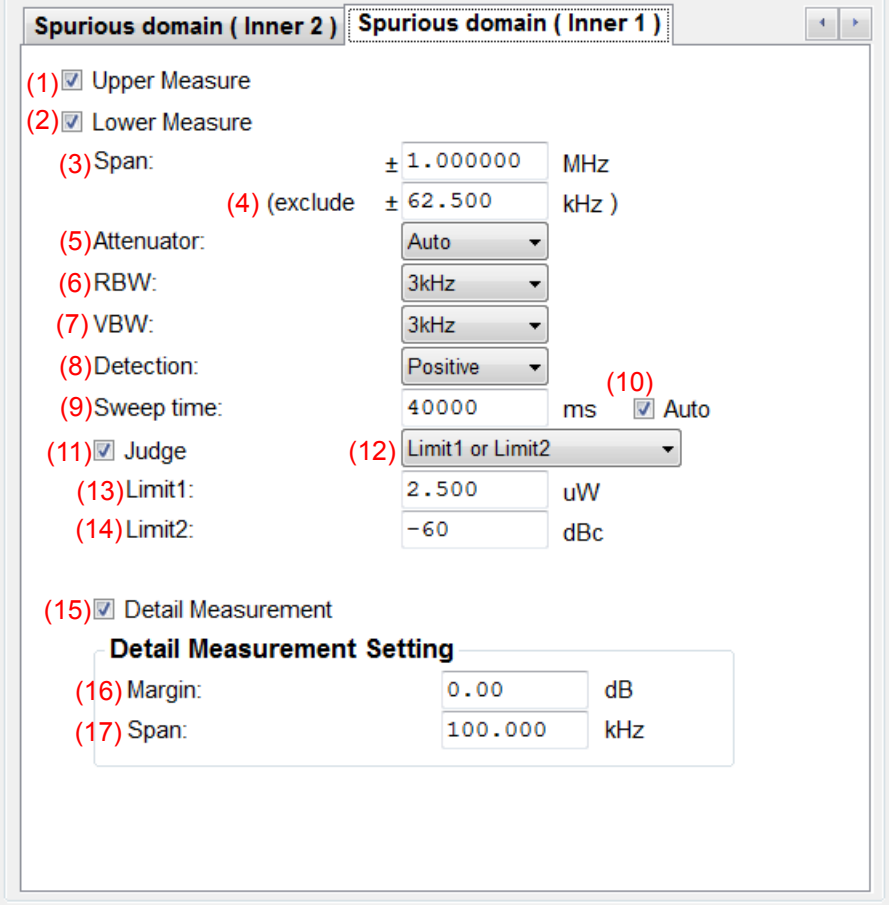
No.	Item	Description
	Spurious domain (Inner2)	
1	Upper Measure	Sets the upper side measurement. Check the box: Enabled (Default) Uncheck the box: Disabled
2	Lower Measure	Sets the lower side measurement. Check the box: Enabled (Default) Uncheck the box: Disabled
3	Span	Sets the span in measurement area. Range: 0.0001 to 100 MHz Default: 10.000000 MHz
4	(exclude ±[ ] kHz)	Sets the excluding span frequency. Range: 0 to 100000 kHz Default: 1000.000 kHz
5	Attenuator	Sets the attenuator in measurement area. Options: Auto, 0, 2, 4, 6, … 58, 60 dB Default: Auto

No.	Item	Description
6	RBW	Selects the RBW in measurement area. Options: 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz, 10 MHz Default: 100 kHz
7	VBW	Selects the VBW in measurement area. Options: 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz, 10 MHz Default: 3 kHz
8	Detection	Selects the detection in measurement area. Options: Normal, Positive, Negative, Sample, RMS Default: Positive
9	Sweep time	Sets the sweep time in measurement area. Range: 1 to 1000000 ms Default: 40000 ms
10	Auto	Sets the sweep time mode to auto/manual. Check the box: Auto (Default) Uncheck the box: Manual
11	Judge	Sets the Pass/Fail evaluation. Check the box: Enabled (Default) Uncheck the box: Disabled
12	(Menu)	Selects the evaluation mode of the limit value. Options: Limit 1, Limit 2, Limit 1 and Limit 2, Limit 1 or Limit 2 Default: Limit 1 or Limit 2
13	Limit 1	Sets the limit value for Pass/Fail evaluation in µW unit. Range: 0.001 to 1000000 µW Default: 2.500 µW
14	Limit 2	Sets the limit value for Pass/Fail evaluation in dBc unit. Range: –100 to 0 dBc Default: –60 dBc
15	Zero Span Measurement	Sets whether to perform power adjustment (zero span) measurement when the measurement doesn't meet the limit. Check the box: Enabled (Default Uncheck the box: Disabled
	Zero Span Measurement Setting	
16	Margin	Sets the condition for power adjustment (zero span) measurement. Power adjustment (zero span) measurement is performed if the difference between measured value and limit value is no more than the value set here. Range: 0 to 50 dB Default: 3.00 dB
17	RBW	Selects the RBW in Zero Span Measurement. Options: 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz, 10 MHz Default: 100 kHz

No.	Item	Description
18	VBW	Selects the VBW in Zero Span Measurement. Options: 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz, 10 MHz Default: 300 kHz
19	Detection	Selects the detection in Zero Span Measurement. Options: Normal, Positive, Negative, Sample, RMS Default: RMS

3.4.3.3 Spurious domain (Inner1)

This section describes how to set the Spurious Measurement parameters for spurious domain (inner1).



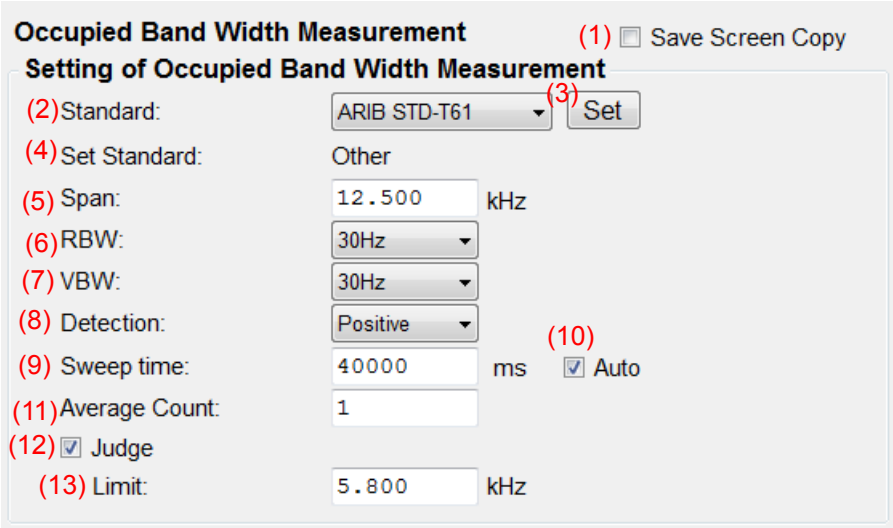
No.	Item	Description
	Spurious Domain (Inner1)	
1	Upper Measure	Sets the upper side measurement. Check the box: Enabled (Default) Uncheck the box: Disabled
2	Lower Measure	Sets the lower side measurement. Check the box: Enabled (Default) Uncheck the box: Disabled
3	Span	Sets the span in measurement area. Range: 0.0001 to 100 MHz Default: 1.000000 MHz
4	(exclude ±[ ] kHz)	Sets the excluding span frequency. Range: 0.1 to 100000 kHz Default: 62.500 kHz
5	Attenuator	Sets the attenuator in measurement area. Options: Auto, 0, 2, 4, 6, … 58, 60 dB Default: Auto

No.	Item	Description
6	RBW	Selects the RBW in measurement area. Options: 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz, 10 MHz Default: 3 kHz
7	VBW	Selects the VBW in measurement area. Options: 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz, 10 MHz Default: 3 kHz
8	Detection	Selects the detection in measurement area. Options: Normal, Positive, Negative, Sample, RMS Default: Positive
9	Sweep time	Sets the sweep time in measurement area. Range: 1 to 1000000 ms Default: 40000 ms
10	Auto	Sets the sweep time mode to auto/manual. Check the box: Auto (Default) Uncheck the box: Manual
11	Judge	Sets the Pass/Fail evaluation. Check the box: Enabled (Default) Uncheck the box: Disabled
12	(Menu)	Selects the evaluation mode of the limit value. Options: Limit 1, Limit 2, Limit 1 and Limit 2, Limit 1 or Limit 2 Default: Limit 1 or Limit 2
13	Limit1	Sets the limit value for Pass/Fail evaluation in µW unit. Limit value is adjusted by RBW setting. Adjusted value for RBW = 10 × log (Reference bandwidth / RBW) Range: 0.001 to 1000000 µW Default: 2.500 µW
14	Limit2	Sets the limit value for Pass/Fail evaluation in dBc unit. Limit value is adjusted by RBW setting. Adjusted value for RBW = 10 × log (Reference bandwidth / RBW) Range: –100 to 0 dBc Default: –60 dBc
15	Detail Measurement	Sets the Detail Measurement when the measurement doesn't meet the limit. Check the box: Enabled (Default) Uncheck the box: Disabled
	Detail Measurement Setting	
16	Margin	Sets the condition for detail measurement. Detail measurement is performed if the difference between measured value and limit value is no more than the value set here. Range: 0 to 50 dB Default: 0.00 dB

No.	Item	Description
17	Span	Sets the span (kHz unit) in Detail Measurement. Range: 0 to 1000 kHz Default: 100.000 kHz

3.4.4 Occupied Band Width Measurement

This section describes how to set the Occupied Band Width Measurement parameters. The spectrum analyzer function is used when measuring the occupied bandwidth.



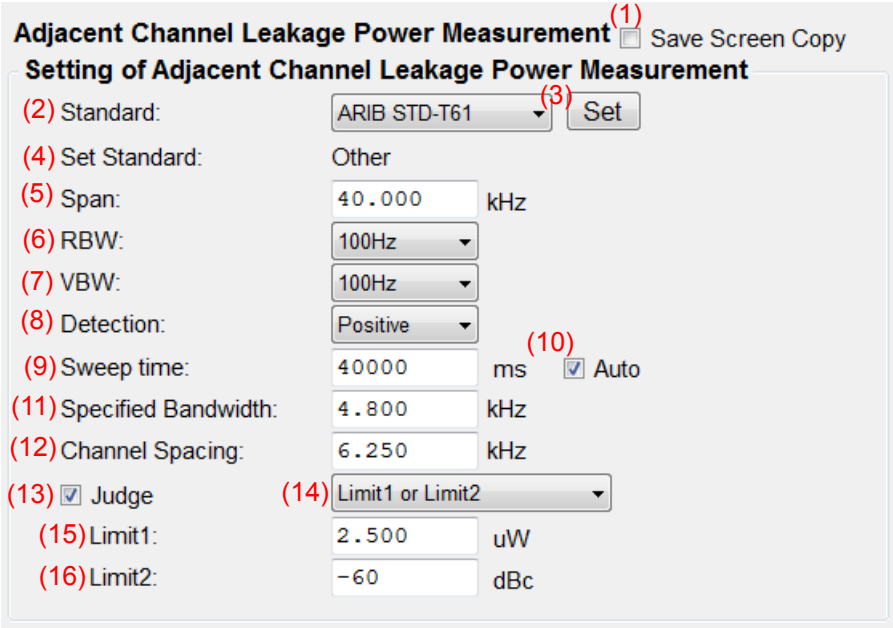
To save any changes you make to the settings, click **Close**.

No.	Item	Description
	Occupied Band Width Measurement	
1	Save Screen Copy	Sets whether to save a screen shot of MS2830A. The screen shot is saved to MS2830A. Check the box: Save Uncheck the box: Does not save (Default)
	Setting of Occupied Band Width Measurement	
2	Standard	Select the standard you want to set automatically. Options: ARIB STD-T61, ARIB STD-T79, ARIB STD-T86 Default: ARIB STD-T61
3	Set	Sets each parameter automatically according to the standard selected in the **Standard** box.
4	Set Standard	Displays the standard set automatically. If you make any changes to the settings, the standard name is replaced by "Other".
5	Span	Sets the span frequency. Range: 1 to 500 kHz Default: 12.500 kHz
6	RBW	Selects the RBW. Options: 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz, 10 MHz Default: 30 Hz

No.	Item	Description
7	VBW	Selects the VBW. Options: 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz, 10 MHz Default: 30 Hz
8	Detection	Selects the detection. Options: Normal, Positive, Negative, Sample, RMS Default: Positive
9	Sweep time	Sets the sweep time Range: 1 to 1000000 ms Default: 40000 ms
10	Auto	Sets the sweep time mode to auto/manual. Check the box: Auto (Default) Uncheck the box: Manual
11	Average Count	Sets the average count. Range: 1 to 100 Default: 1
12	Judge	Sets the Pass/Fail evaluation. Check the box: Enabled (Default) Uncheck the box: Disabled
13	Limit	Sets the limit value for Pass/Fail evaluation. Range : 0 to 500 kHz Default: 5.800 kHz

3.4.5 Adjacent Channel Leakage Power Measurement

This section describes how to set the Adjacent Channel Leakage Power Measurement parameters. The spectrum analyzer function is used when measuring the adjacent channel leakage power.



To save any changes you make to the settings, click **Close**.

No.	Item	Description
	Adjacent Channel Leakage Power Measurement	
1	Save screen copy	Sets whether to save a screen shot of MS2830A. The screen shot is saved to MS2830A. Check the box: Save Uncheck the box: Does not save (Default)
	Setting of Adjacent Channel Leakage Power Measurement	
2	Standard	Select the standard you want to set automatically. Options: ARIB STD-T61, ARIB STD-T79, ARIB STD-T86 Default: ARIB STD-T61
3	Set	Sets each parameter automatically according to the standard selected in the **Standard** box.
4	Set Standard	Displays the standard set automatically. If you make any changes to the settings, the standard name is replaced by "Other".
5	Span	Sets the sweep frequency. Range: 1 to 500 kHz Default: 40.000 kHz

No.	Item	Description
6	RBW	Selects the RBW. Options: 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz, 10 MHz Default: 100 Hz
7	VBW	Selects the VBW. Options: 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz, 10 MHz Default: 100 Hz
8	Detection	Selects the detection. Options: Normal, Positive, Negative, Sample, RMS Default: Positive
9	Sweep time	Sets the sweep time. Range: 1 to 1000000 ms Default: 40000 ms
10	Auto	Sets the sweep time mode to auto/manual. Check the box: Auto (Default) Uncheck the box: Manual
11	Specified Bandwidth	Sets the specified bandwidth. Range: 1 to 500 kHz Default: 4.800 kHz
12	Channel Spacing	Sets the channel spacing. Range: 1 to 500 kHz Default: 6.250 kHz
13	Judge	Sets the Pass/Fail evaluation. Check the box: Enabled (Default) Uncheck the box: Disabled
14	(Menu)	Selects the evaluation mode of the limit value. Options: Limit 1, Limit 2, Limit 1 and Limit 2, Limit 1 or Limit 2 Default: Limit 1 or Limit 2
15	Limit1	Sets the limit value for Pass/Fail evaluation in µW unit. Range: 0.001 to 1000000 µW Default: 2.500 µW
16	Limit2	Sets the limit value for Pass/Fail evaluation in dBc unit. Range: –100 to 0 dBc Default: –60 dBc

3.5 Setting TX CW Measurement

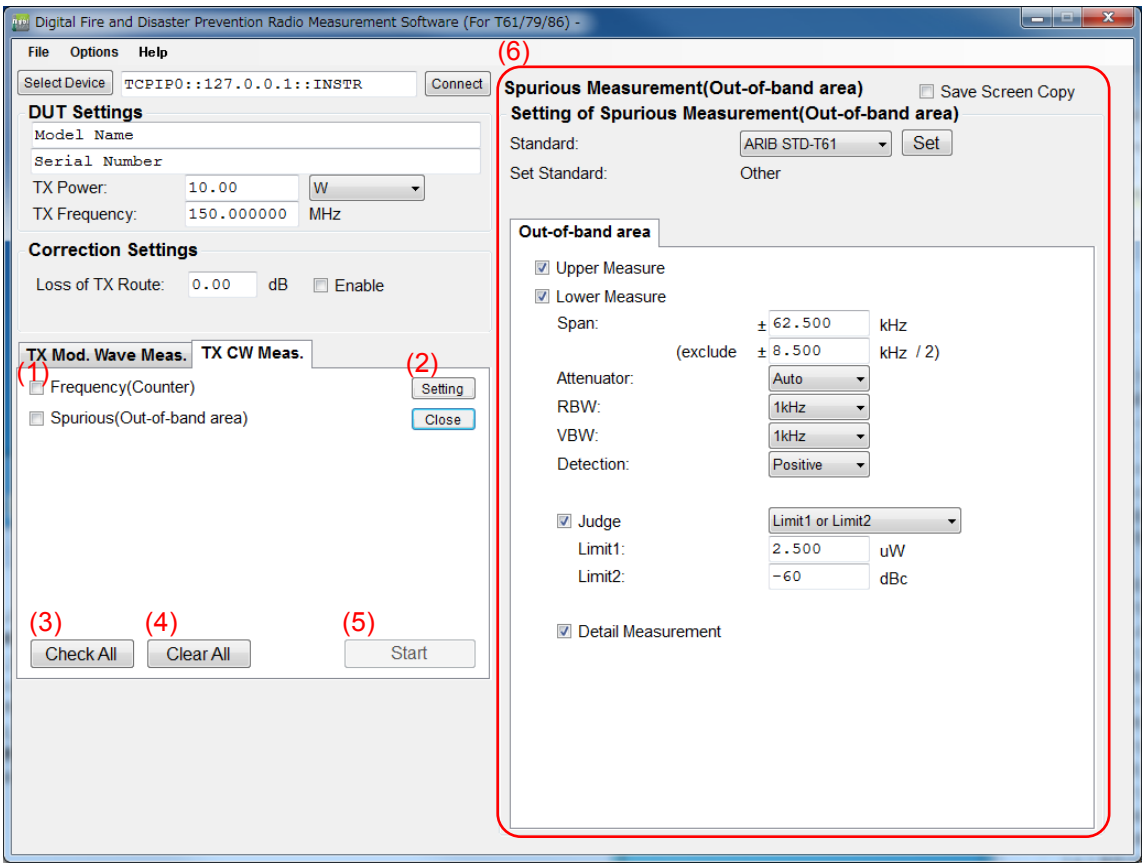
Before starting measurement, you need to select the measurement items and set the parameters for measurement. This section describes how to set the parameters for TX CW measurement.

3.5.1 Selecting TX CW Measurement items

This section describes how to select a measurement item(s) to be included in Tx CW measurement. Only the measurement item(s) selected here will be measured.

Note:

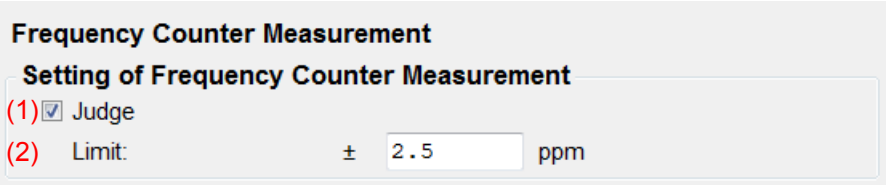
Some of the measurement items cannot be measured unless the other measurement item(s) is(are) complete. In this case, the check box(es) for the required measurement item(s) will be selected automatically.



No.	Item	Description
1	(Check box)	Select the check box(es) for the TX CW measurement item(s) you want to test. Default: All off
2	Setting/Close	Displays/hides the detailed settings for the measurement item in the display area.
3	Check All	Sets all TX CW Measurement check boxes to On.
4	Clear All	Sets all TX CW Measurement check boxes to Off.
5	Start	Performs the selected measurement item(s) sequentially. Measurement cannot be started until this software is successfully connected to MS2830A. Refer to 3.1.4 Connecting with MS2830A
6	Display area	Displays the detailed settings for the measurement item if the caption on the button (2) is **Setting**. Hides them if the caption is **Close**.

3.5.2 Frequency (Counter)

This section describes how to set the Frequency Counter Measurement parameters. The spectrum analyzer function is use when measuring the frequency.

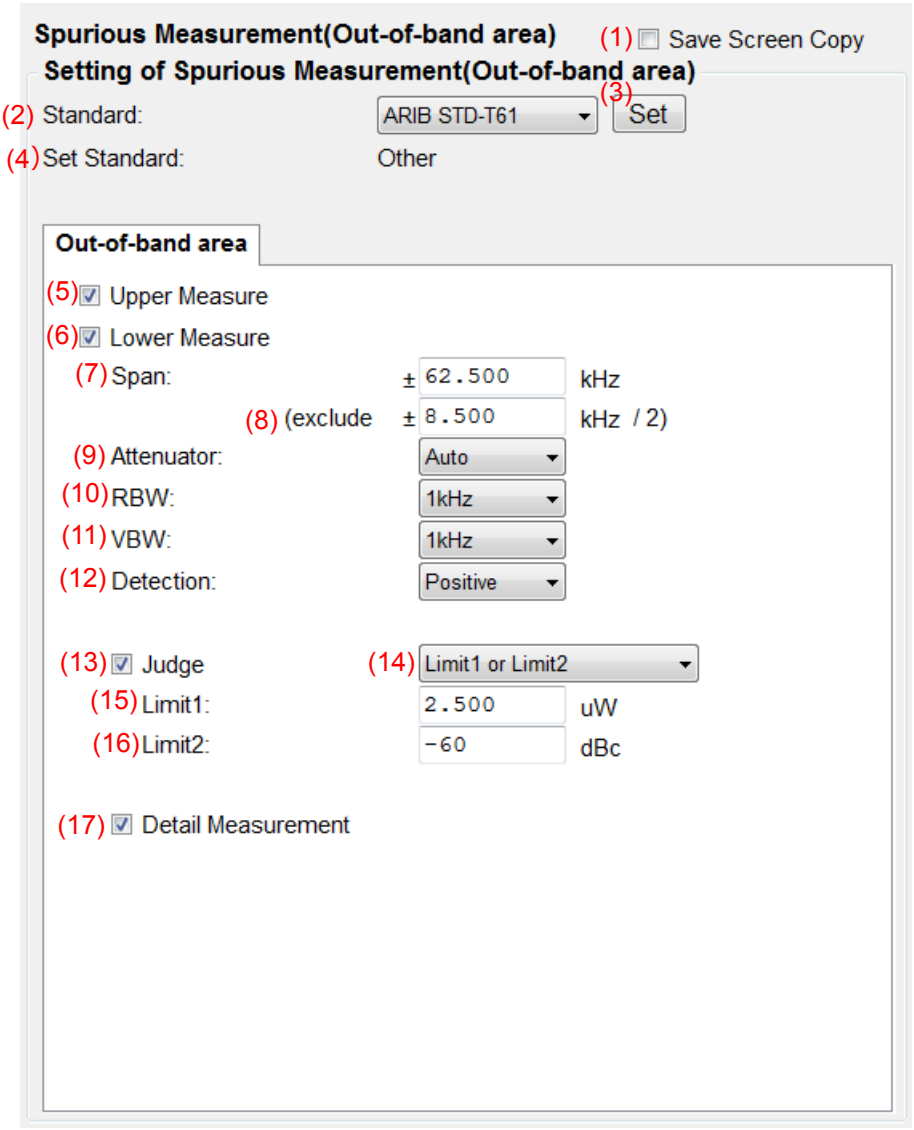


To save any changes you make to the settings, click **Close**.

No.	Item	Description
	Frequency Counter Measurement	
	Setting of Frequency Counter Measurement	
1	Judge	Sets the Pass/Fail evaluation. Check the box: Enabled (Default) Uncheck the box: Disabled
2	Limit	Sets the limit value for Pass/Fail evaluation. Range: 0 to 100 ppm Default: 2.5 ppm

3.5.3 Spurious (Out-of-band area)

This section describes how to set the Spurious Measurement parameters for out-of-band area. The spectrum analyzer function is used when measuring spurious emissions.



To save any changes you make to the settings, click **Close**.

No.	Item	Description
	Spurious Measurement (Out-of -band area)	
1	Save Screen Copy	Sets whether to save a screen shot of MS2830A. The screen shot is saved to MS2830A. Check the box: Save Uncheck the box: Does not save (Default)
	Setting of Spurious Measurement (Out-of -band area)	

No.	Item	Description
2	Standard	Sets each parameter automatically according to the standard selected in the **Standard** box. Options: ARIB STD-T61, ARIB STD-T79, ARIB STD-T86 Default ARIB STD-T61
3	Set	Sets the standard selected in the **Standard** box.
4	Set Standard	Displays the standard set automatically. If you make any changes to the settings, the standard name is replaced by "Other".
	Out-of -band area	
5	Upper Measure	Sets the upper side measurement. Check the box: Enabled (Default) Uncheck the box: Disabled
6	Lower Measure	Sets the lower side measurement. Check the box: Enabled (Default) Uncheck the box: Disabled
7	Span	Sets the span in measurement area. Range: 0.1 to 100000 kHz Default: 62.500 kHz
8	(exclude ±[ ] kHz/2)	Sets the excluding span frequency. Range: 0.1 to 500 kHz Default: 8.500 kHz
9	Attenuator	Sets the attenuator in measurement area. Options: Auto, 0, 2, 4, 6, … 58, 60 dB Default: Auto
10	RBW	Selects the RBW in measurement area. Options: 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz, 10 MHz Default: 1 kHz
11	VBW	Selects the VBW in measurement area. Options: 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 3 MHz, 10 MHz Default: 1 kHz
12	Detection	Selects the detection in measurement area. Options: Normal, Positive, Negative, Sample, RMS Default: Positive
13	Judge	Sets the Pass/Fail evaluation. Check the box: Enabled (Default) Uncheck the box: Disabled
14	(Menu)	Selects the evaluation mode of the limit value. Options: Limit 1, Limit 2, Limit 1 and Limit 2, Limit 1 or Limit 2 Default: Limit 1 or Limit 2
15	Limit 1	Sets the limit value for Pass/Fail evaluation in µW unit. Range: 0.001 to 1000000 µW Default: 2.500 µW

No.	Item	Description
16	Limit 2	Sets the limit value for Pass/Fail evaluation in dBc unit. Range: –100 to 0 dBc Default: –60 dBc
17	Detail Measurement	Sets the Detail Measurement when the measurement doesn't meet the limit. Check the box: Enabled (Default) Uncheck the box: Disabled

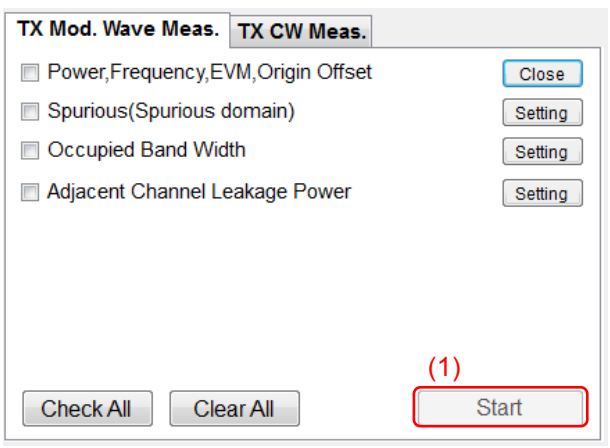
3.6 Measurement, Results

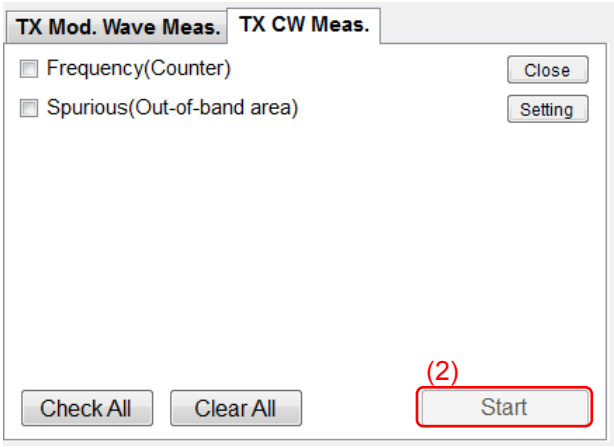
This section describes the start measurement in 3.6.1 to 3.6.3, the measurement results in 3.6.4 to 3.6.10, the saving results in 3.6.11.

3.6.1 Starting the measurement

Make sure the parameters have been set according to 3.4 “Setting TX Modulation Wave Measurement” and/or 3.5 “Setting TX CW Measurement” before starting measurement.

To start measurement, click on one of the **Start** buttons (1 or 2) that fits the type of measurement. The caption “Start” on the clicked button will be replaced by “Stop”.





No.	Item	Description
1	Start	Starts Tx modulation wave measurement for the selected measurement item(s).
2	Start	Starts Tx CW measurement for the selected measurement item(s).

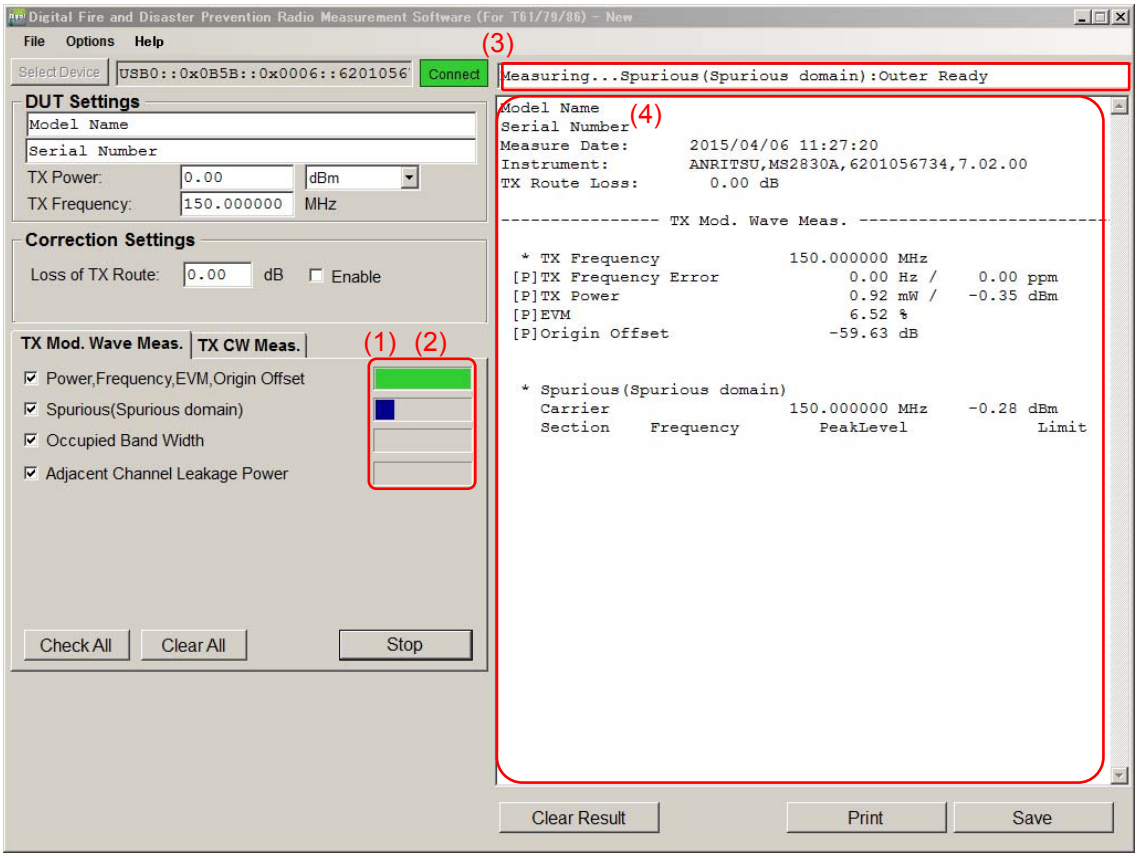
3.6.2 Stopping the measurement

To stop the measurement, click **Stop**.

The measurement may not be able to be stopped while MS2830A is performing measurement.

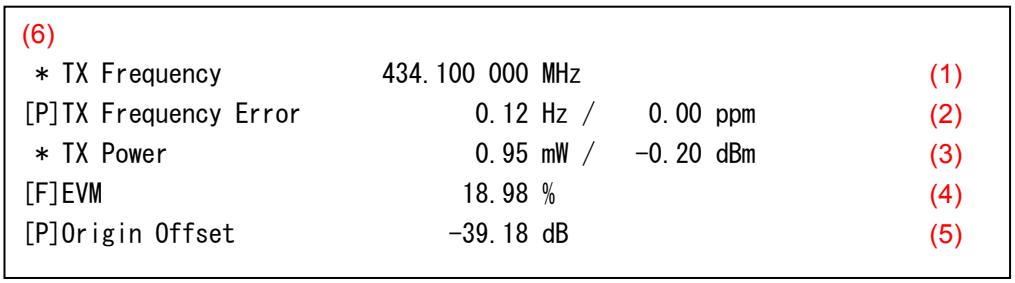
3.6.3 Progress indication

This section describes the items that appear on the screen during measurement.



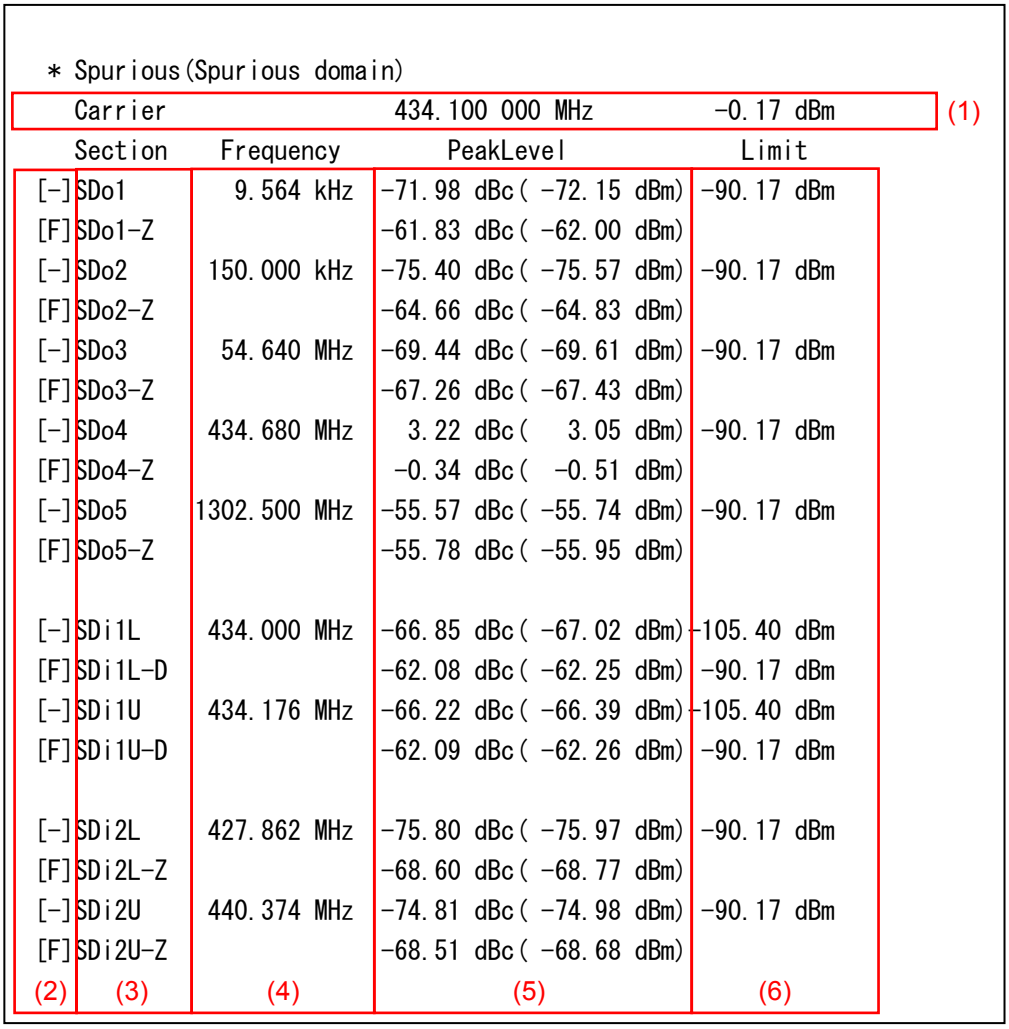
No.	Item	Description
1	Progress bar for TX modulation wave measurement	Displays the progress of the TX modulation wave measurement.
2	Progress bar for TX CW measurement	Displays the progress of the TX CW measurement.
3	Status message	Displays the measurement status message.
4	Measurement results	Displays the measurement results in the selected language.

3.6.4 TX Modulation Wave: Vector Modulation Analysis Measurement



No.	Item	Description
1	TX Frequency	Displays the TX Frequency measurement result. **.*** MHz
2	TX Frequency Error	Displays the TX Frequency Error measurement results. **.*** Hz / **.** ppm
3	TX Power	Displays the TX Power measurement results. **.*** mW / **.** dBm When using USB power sensor, “(Power Sensor)” is indicated.
4	EVM	Displays the EVM measurement results. **.** %
5	Origin Offset	Displays the Origin Offset measurement results. **.** dB
6	(Judge)	Displays Pass/Fail evaluation. [P]: Pass [F]: Fail * : Not evaluated.

3.6.5 TX Modulation Wave: Spurious (Spurious domain)



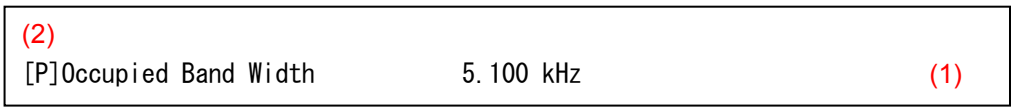
* Spurious(Spurious domain)

	Carrier		434.100 000 MHz	-0.17 dBm (1)
	Section	Frequency	PeakLevel	Limit
[-]	SDo1	9.564 kHz	-71.98 dBc(-72.15 dBm)	-90.17 dBm
[F]	SDo1-Z		-61.83 dBc(-62.00 dBm)	
[-]	SDo2	150.000 kHz	-75.40 dBc(-75.57 dBm)	-90.17 dBm
[F]	SDo2-Z		-64.66 dBc(-64.83 dBm)	
[-]	SDo3	54.640 MHz	-69.44 dBc(-69.61 dBm)	-90.17 dBm
[F]	SDo3-Z		-67.26 dBc(-67.43 dBm)	
[-]	SDo4	434.680 MHz	3.22 dBc(3.05 dBm)	-90.17 dBm
[F]	SDo4-Z		-0.34 dBc(-0.51 dBm)	
[-]	SDo5	1302.500 MHz	-55.57 dBc(-55.74 dBm)	-90.17 dBm
[F]	SDo5-Z		-55.78 dBc(-55.95 dBm)	
[-]	SDi1L	434.000 MHz	-66.85 dBc(-67.02 dBm)	-105.40 dBm
[F]	SDi1L-D		-62.08 dBc(-62.25 dBm)	-90.17 dBm
[-]	SDi1U	434.176 MHz	-66.22 dBc(-66.39 dBm)	-105.40 dBm
[F]	SDi1U-D		-62.09 dBc(-62.26 dBm)	-90.17 dBm
[-]	SDi2L	427.862 MHz	-75.80 dBc(-75.97 dBm)	-90.17 dBm
[F]	SDi2L-Z		-68.60 dBc(-68.77 dBm)	
[-]	SDi2U	440.374 MHz	-74.81 dBc(-74.98 dBm)	-90.17 dBm
[F]	SDi2U-Z		-68.51 dBc(-68.68 dBm)	
(2)	(3)	(4)	(5)	(6)

No.	Item	Description
	Spurious(Spurious domain)	
1	Carrier	Displays the measured frequency and power level of the carrier. **.*** MHz **.** dBm
2	(Judge)	Displays Pass/Fail evaluation. [P]: Pass [F]: Fail [--]: Zero span or Detail measurement was performed because the measured value exceeded the limit. * : Not evaluated.

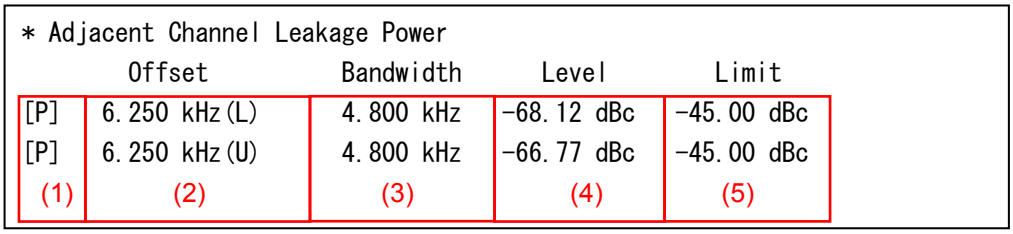
No.	Item	Description
3	Section	Displays the spurious measurement section. SDoN: Spurious Domain (Outer) segment 1 to 6 SDoN-Z: Spurious Domain (Outer) Zero Span segment 1 to 6 SDi1L: Spurious Domain (Inner1) Lower SDi1L-D: Spurious Domain (Inner1) Lower Detail SDi1U: Spurious Domain (Inner1) Upper SDi1U-D: Spurious Domain (Inner1) Upper Detail SDi2L: Spurious Domain (Inner2) Lower SDi2L-Z: Spurious Domain (Inner2) Lower Zero Span SDi2U: Spurious Domain (Inner2) Upper SDi2U-Z: Spurious Domain (Inner2) Upper Zero Span
4	Frequency	Displays the frequency in each segment. ****.*** kHz: If the measured frequency is lower than 1 MHz ****.*** MHz: If the measured frequency is 1 MHz or higher
5	Peak Level	Displays the peak level in each segment. **.** dBc (**.** dBm) dBc = (Peak level in each segment) – (CW measurement results)
6	Limit	Displays the limits in each segment. **.** dBm

3.6.6 TX Modulation Wave: Occupied Band Width



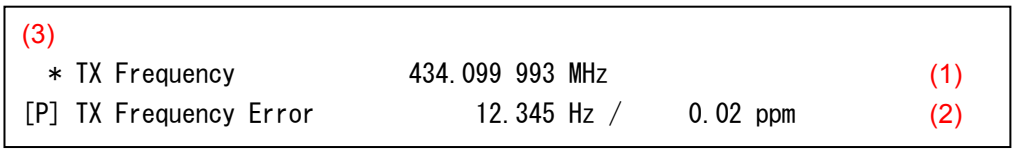
No.	Item	Description
1	Occupied Band Width	Displays the occupied band width measurement result. **.*** kHz
2	(Judge)	Displays Pass/Fail evaluation. [P]: Pass [F]: Fail * : Not evaluated.

3.6.7 TX Modulation Wave: Adjacent Channel Leakage Power



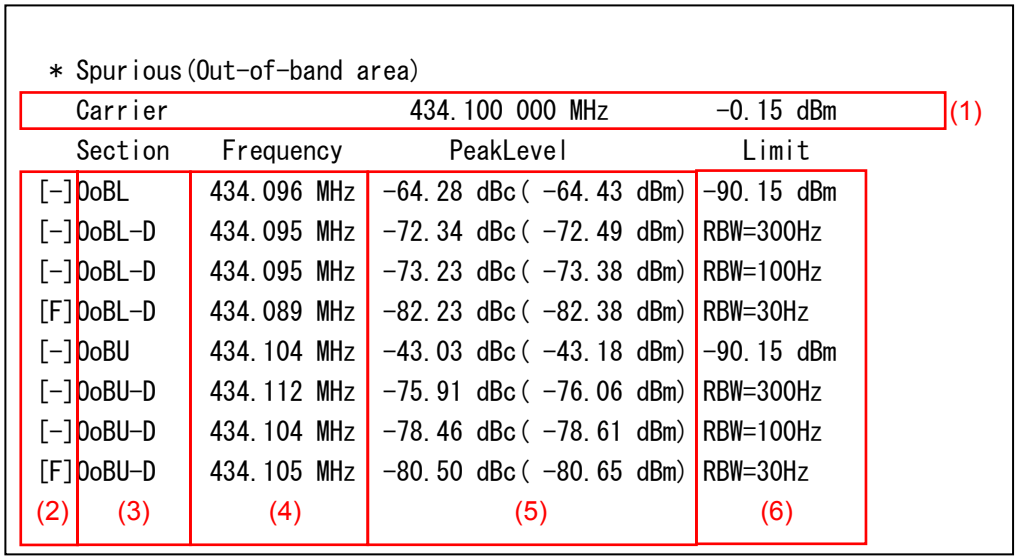
No.	Item	Description
	Adjacent Channel Leakage Power	
1	(Judge)	Displays Pass/Fail evaluation. [P]: Pass [F]: Fail * : Not evaluated.
2	Offset	Displays the specified offset. **.*** kHz (L): Lower side offset **.*** kHz (U): Upper side offset
3	Bandwidth	Displays the bandwidth. **.*** kHz
4	Level	Displays the measurement result. **.** dBc
5	Limit	Displays the limit. **.** dBc

3.6.8 TX CW Measurement: Frequency (Counter)



No.	Item	Description
1	TX Frequency	Displays the TX Frequency measurement result. **.*** MHz
2	TX Frequency Error	Displays the TX Frequency Error measurement results. **.*** Hz / **.** ppm
3	(Judge)	Displays Pass/Fail evaluation. [P]: Pass [F]: Fail * : Not evaluated.

3.6.9 TX CW Measurement: Spurious (Out-of-band area)



* Spurious(Out-of-band area)

	Carrier	434.100 000 MHz	-0.15 dBm	(1)
	Section	Frequency	PeakLevel	Limit
[-]	OoBL	434.096 MHz	-64.28 dBc(-64.43 dBm)	-90.15 dBm
[-]	OoBL-D	434.095 MHz	-72.34 dBc(-72.49 dBm)	RBW=300Hz
[-]	OoBL-D	434.095 MHz	-73.23 dBc(-73.38 dBm)	RBW=100Hz
[F]	OoBL-D	434.089 MHz	-82.23 dBc(-82.38 dBm)	RBW=30Hz
[-]	OoBU	434.104 MHz	-43.03 dBc(-43.18 dBm)	-90.15 dBm
[-]	OoBU-D	434.112 MHz	-75.91 dBc(-76.06 dBm)	RBW=300Hz
[-]	OoBU-D	434.104 MHz	-78.46 dBc(-78.61 dBm)	RBW=100Hz
[F]	OoBU-D	434.105 MHz	-80.50 dBc(-80.65 dBm)	RBW=30Hz
(2)	(3)	(4)	(5)	(6)

No.	Item	Description
	Spurious(Out-of-band area)	
1	Carrier	Displays the carrier frequency and power measurement results. **.*** MHz **.** dBm
2	(Judge)	Displays Pass/Fail evaluation. [P]: Pass [F]: Fail [--]: Detail measurement was performed because the measured value exceeded the limit. * : Not evaluated.
3	Section	Displays the spurious measurement section. OoBL: Out-of-band area Lower OoBL-D: Out-of-band area Lower Detail OoBU: Out-of-band area Upper OoBU-D: Out-of-band area Upper Detail
4	Frequency	Displays the frequency in each segment. ****.*** kHz: If the measured frequency is lower than 1 MHz ****.*** MHz: If the measured frequency is 1 MHz or higher
5	Peak Level	Displays the peak level in each segment. **.** dBc (**.** dBm) dBc = (Peak level in each section) – (CW measurement results)
6	Limit	Displays the limits in each section. **.** dBm RBW=***Hz: RBW when measuring

3.6.10 Total Result

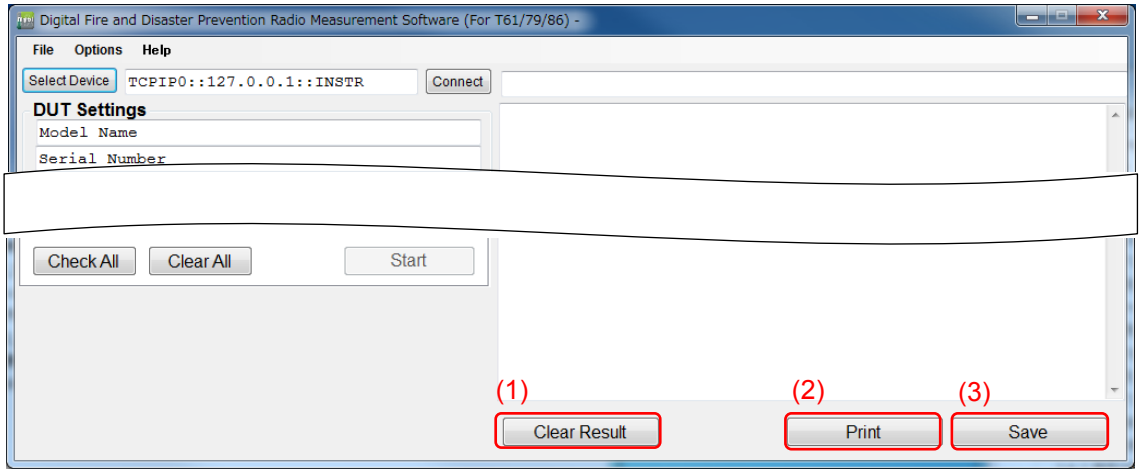
This item is displayed only if both of the following conditions are met:

- The software you are using is MX269057A.
- Pass/Fail evaluation has been performed.

No.	Item	Description
1	Total Result	Displays the total result. [PASS]: All the evaluation results are PASS. [FAIL]: At least one evaluation result is FAIL.
2	(Judge)	Displays the total result. [P]: Pass [F]: Fail

3.6.11 Clearing/printing/saving the measurement results

This section describes how to clear/print/save the results obtained by measurement.



No.	Item	Description
1	Clear Result	Clears the measurement results displayed in results area.
2	Print	Prints the measurement results displayed in results area. Refer to your printer operation manual. The results cannot be printed when this software is installed on MS2830A.
3	Save	Saves the measurement results displayed in the measurement result area, in text or csv format. File name: Results_yyyymmdd_hhmmss.txt (Default) File name: Results_yyyymmdd_hhmmss.csv (Default) Destination folder C:\Anritsu\AutoMeasure\Digital\UserData.Digital\Results

3.7 Status Messages

3.7.1 Measurement status messages

This section describes the measurement status messages that may be displayed in black in the status area.

Status	Description
(Blanks)	Software has already been started. (Initial state)
Connected	Connection to MS2830A has already been established.
Disconnected	Connection to MS2830A has already been disconnected.
Measuring…(Measuring item)	The displayed item is being measured.
Measurement Complete	Measurement has completed.

3.7.2 Error messages

This section describes the error messages that may be displayed in red in the status area.

Error Message List
Not connected to MS2830A.
Connection Error
Timeout
Failed to set a parameter to MS2830A.
Failed to send a command.
Failed to receive a command.
Failed to query.
Some setting parameters are irregal.
Failed to authorize. (device must be MS2830A)
Failed to authorize. (MX269017A license needed)
Aborted.
Invalid result.
RF Input signal is not correct.
RF Input level is too high.
RF Input level is too low.
Uncal. Some settings maybe not correct.
Setting of TX Power is out of range.
Any USB Power sensor has not been connected yet.
Some errors occurred on the USB Power sensor.
Connected USB Power Sensor is not compatible.
Measurement was not completed.