## 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**

# 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



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



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

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)

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

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- 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.

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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.

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  - iv) If this Software or the Equipment has been modified, repaired, or otherwise altered without Anritsu's prior approval.
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- 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.

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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\*<sup>1</sup>

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

You are allowed to use NI-VISA<sup>™\*<sup>2</sup></sup> 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<sup>™</sup> 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.

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### 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.

MS2830A Signal Analyzer Operation Manual (Main Frame Operation)

MS2690A/MS2691A/MS2692A and MS2830A Signal Analyzer Operation Manual (Main Frame Remote Control)

MS2830A Signal Analyzer Operation Manual (Spectrum Analyzer Function Operation)

MS2690A/MS2691A/MS2692A and MS2830A Signal Analyzer Operation Manual (Spectrum Analyzer Function Remote Control)

MX269017A Vector Modulation Analysis Software Operation Manual (Operation)

MX269017A Vector Modulation Analysis Software Operation Manual (Remote Control)

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

MN2555A Duplexer Box Operation Manual

- 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.

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# 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).

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### 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.

### 1.1 Product Overview

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

Meas	Product Version	Free Version	Remarks		
Modulation	Power measurement	✓	~	Measured by MX269017A	
Wave	Frequency measurement	✓	✓	The free version can measure	
Measurement	EVM measurement	✓	✓	only the waveforms supported	
	Origin Offset measurement	✓	✓	by Predefined <sup>*</sup> of MX269017A.	
	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	Frequency Counter measurement	✓	✓		
Measurement	Spurious measurement (Out-of -band area)	~	~		
Others	Total Result	✓		Displays the total result.	
	Saving and Loading the parameter files	~			

 Table 1.1-1
 Function comparison between Product and Free Versions

\*: The setting indicated Predefined parameters on Table 1.3.1-1 "Specifications". 1

# **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.

ltems	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

#### Table 1.2.1-1 This Software 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.

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_UL T61_FDMA_PSC_DL T86_CCH_UL T86_CCH_DL T86_TCH_UL		
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

1

### Chapter 1 Preparation

ltem	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	Accuracy: Same as MS2830A Spectrum analyzer function
Power	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.

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## 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	$5~\mathrm{GB}$ or more free space in the drive where		
	this software is to be installed.		
Peripheral device			
Display	Displays with a resolution of $1024 \times 768$ 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.

Microsoft .NET Framework 4 Se	tup	
.NET Framework 4 Setup Please accept the license term	is to continue.	Microsoft .NET
		Î
I have read and accept the	I have read and accept the license terms.	
Download size estimate: Download time estimates:	0 MB Dial-Up: 0 minutes Broadband: 0 minutes	
		Install Cancel

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

- 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 <u>the setup disk</u> for this software, double-click the setup.exe file stored in the \AutoMeasure\Digital folder on <u>the</u> <u>setup disk</u>.
- 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"
- When you see the following message, click the Finish button: "Update Complete"

2

### 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. <u>http://www.ni.com/downloads/ni-drivers/ja/</u>

<Procedure>

 Double-click the setup.exe file in the folder where the files of the NI-VISA are stored. When installing the NI-VISA using <u>the setup</u> disk, double-click the "visa503full.exe" file in the

\AutoMeasure\NI-VISA directory of <u>the setup disk</u>. 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.



### Chapter 2 Preparation

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



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

4 NI-VISA 5.0.3	
Destination Directory Select the primary installation directory.	<b>NATIONAL</b> INSTRUMENTS
National Instruments software will be installed in a subfolder of the following. To different folder, click the Browse button and select another.	install into a
Destination Directory C:\Program Files (x86)\National Instruments\	Browse
Kack	lext >> Cancel

2



When you see the following screen, click the icon (1) on the left side 5. 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.



 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.



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

4 NI-VISA 5.0.3	
Sevent Se	NATIONAL INSTRUMENTS
All ISA 5.0.3      Autor SA 5.0.3      Autor SA 5.0.3      Autor Support      Autor	Run Time Support for VISA Applications
NI Instrument I/D Assistant 2.6.1 NI Spy 2.7.2 NI System Configuration 1.1.3 NI Measurement & Automation Explorer 4.7. NI-1588 Configuration 1.0	This feature will not be installed. This feature and its selected subcomponents may require up to 0.00 Bytes of disk space.
III     Directory for Run Time Support	Browse
Restore Feature Defaults Disk Cost	<

Click the (1) [+] on the left side of the "Development Support". 10. Click the icon (2) on the left side of the ".NET Framework 4.0 Languages Support".

ek the (3) <b>Install this feature to a local drive</b> .			
UI NI-VISA 5.0.3			
Features Select the features to install.			
Examples Driver Development	.NET interface for communicating with instruments using NI-VISA. Requires the Microsoft .NET Framework 4.0 and is typically used in Visual Studio 2010.		
.NET Framework 2.0 Lan ⊕	×		

 $\langle \alpha \rangle$ Cli

Select the features to install.	INSTRUMENTS
Development Support     X     Examples     Driver Development     LabWindows/CVI Suppo     NET Framework 2.0 Lan     Measurement Studio for \     NET Framework 3.5 Lan     Measurement Studio for \     NET Framework 4.0 Lar	.NET interface for communicating with instruments using NI-VISA. Requires the Microsoft .NET Framework 4.0 and is typically used in Visual Studio 2010.
Install this feature to a local Install this feature and its su Install this feature and its su	drive ubfeatures to a local drive subcomponents may isk snare
NI System Configuration 1.1.3     NI Measurement & Automation Explorer     TI     Directory for .NET Framework 4.0 Languages Support	
	Browse

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**.

😡 NI-VISA 5.0.3	
Features Select the features to install.	
NI-VISA 5.0.3     Run Time Support     Configuration Support     X      Configuration Support     X      Development Support     X      Real-Time Support     Windows Mobile/CE Support     NI Instrument I/O Assistant 2.6.1     NI Spy 2.72     Install this feature to a local drive     B Install this feature and its subfeatures to	Debugging utility for monitoring function calls to various National Instruments APIs.
Do not install this feature	nd its selected subcomponents may .63 MB of disk space.
Directory for NI Spy 2.7.2	Browse
Restore Feature Defaults Disk Cost	<pre></pre>

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

Features Select the features to install.	TNATIONAL INSTRUMENT:
Development Support     X     Diriver Development     Development     Diriver Development     LabWindows/CVI Suppo     X     Diriver Development     LabWindows/CVI Suppo     X     NET Framework 2.0 Lan     Measurement Studio for\     Remote Server     Real-Time Support     Windows Mobile/CE Support     Windows Mobile/CE Support     NI System Configuration 1.1.3     NI Measurement & Automation Explorer     Vi Measurement & Automation Explorer     Vi Measurement & Automation Explorer     Vi Measurement & Automation Explorer	.NET interface for communicating with instruments using NI-VISA. Requires the Microsoft .NET Framework 4.0 and is typically used in Visual Studio 2010.
Restore Feature Defaults Disk Cost	Karter Ka Karter Karter Kar

### 2.4 NI-VISA Installation procedure

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.

4 NI-VISA 5.0.3	
Start Installation Review the following summary before continuing.	
Adding or Changing • NI-VISA 5.0.3 Run Time Support Development Support	
Click the Next button to begin installation. Click the Back button to change the insta	llation settings.
Save File)	Next >> Cancel



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".

🎬 Software Version		×	3/24/2015 19:04:49
Software Version		Package Version : 7.03.00	Configuration Sritware Version
Name	Product Type	Product Version	
Spectrum Analyzer	MX269000A	7.01.01	
Signal Analyzer	MX269000A	7.00.01	
Recreate	MX269000A	7.00.00	
Signal Generator	MX269000A	7.00.00	
Power Meter	MX269000A	7.01.00	
Vector Modulation Analysis	MX269017A	7.02.00	
Analog Modulation Analysis	MX269018A	7.02.00	
3GLTE Downlink	MK269020A	7.00.01	
LTE-TDD Downlink	MK269022A	7.00.03	
Application Manager and Config	MK269000A	7.01.01	
			Glose
			Close
		Close	
		Close	
### 2.5.2 Loading applications

- 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.

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

Application Sw	itch Registration		×	3/24/2015 18:48:00
Applicati	on Switch Registration			Gonfiguration
Loaded Applica	ations			Load
Туре	Name	Version	Position	
MX269000A	Spectrum Analyzer	7.01.01	P1 - F1	Application Select
MX269000A	Power Meter	7.01.00	P1 - F2	
MX269017A	Vector Modulation Analysis	7.02.00	P1 - F3	Lini ond
-	-	-	P1 – F4	UnLoau
-	-	-	P1 – F5	Application Select
-	-	-	P1 – F6	Application delect
-	-	-	P1 - F7	
-	-	-	P2 - F1	
-	-	-	P2 - F2	Position Change
-	-	-	P2 - F3	
-	-	-	P2 - F4	
-	-	-	P2 - F5	-
-	-	-	P2 - F6	
-	-	-	P2 - F7	
Unloaded Appli	ications			
Туре	Name	Version		
MX269000A	Signal Generator	7.00.00		
MX269020A	3GLTE Downlink	7.00.01		
MX269022A	LTE-TDD Downlink	7.00.03		
MX269018A	Analog Modulation Analysis	7.02.00		
MX269000A	Signal Analyzer	7.00.01		
				Set
				Glose
				Close
			Close	Close

2

### 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 SIGANAAll** to start the calibration process. The following progress bar is displayed while the calibration is in progress.

↑ MS2830A Vector N	fodulation Analysis			3/24/2015 18:53:19
Carrier Freq.	150 000 000 Hz Input Lev	el -10.00 dBm		Application Splash
	ATT	4 dB		
Result				
Numeric		Constellation	-	
Tx Power	***.** dBm		<u> </u>	
Frequency Error	****.** Hz	MKR		
EVM(rms)	**.** %	**** ***		
EVM(peak)	**.** %	Symbol		
Phase Error(rms)	deg.			
Phase Error(peak)	deg.	** ****		
Mag. Error(rms)	. %			
Origin Offset	Cal all is up	or monouromont		
IQ Gain Imbalance	OHE HEE IS UN			
Quadrature Error				
EVM vs Symbol		Magnitude Error v	s Symbol	
MKR Symbol	**** EVM **.** %	MKR Symbol	Mag. Error Mag. K	
5.00		5.00		
275		250		
0.70		2.50		
2.50		0.00		
1.25		-2.50		
0.00		-5.00		
4		85 4	1	85
Ref.Int Pre-	Amp Off			

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

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## 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.	ltem	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 <b>VISA Setting</b> 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 <b>TX Mod Wave Meas</b> tab and <b>TX CW</b> <b>Meas</b> 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.
12	Print	Refer to 3.6.11 Clearing/printing/saving the measurement
13	Save	results
14		Minimizes this software window.
15	x	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.





Help				
(9) a	bout	this	software	

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)
	-	т.·	Japanese Language Japanese
8		License	Selects the license.
			when connecting to MS2830A without a numbered license, only <b>Free</b> is evailable as the
			license option. With a purchased license either
			<b>Product</b> or <b>Free</b> 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.

	InterfaceSetting	
(1)	Use MN2555A (2) Read M	N2555A Correction Data from USB Memory
	Setting of MN2555A	
(3)	MN2555A Correction File:	SN6201497300-00/20150130 -
(4)	U-Link cable(SG) Correction File:	J1647A 👻
(5)	U-Link cable(SA) Correction File:	J1647A 👻
		Set Cancel

No.	ltem	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	Loads the MN2555A correction data from the
	from USB Memory	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.
- 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).

DUT Settings	
(1) Model Name	
(2) Serial Number	
(3) TX Power:	10.00 (4) W 🔹
(5) TX Frequency:	150.000000 MHz

Configure the parameter settings according to the table below.

No.	ltem	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: $1 \mu W$ 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

Correction Settings			
1) Loss of TX Route:	0.00	dB (2) 🔲 Enable	

The following path loss value is reflected to measurement results.

No.	ltem	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 50Default:0.00 dB				
2	Enable	Sets whether to reflect the value set in the Loss of TX Route boxto measurement results.Check the box:Reflects.Uncheck the box:Does not reflect. (Default)				

Note:

These settings will not be saved in the parameter file.

#### $\blacksquare$ Check the [Use MN2555A] box

#### (1) MN2555A - SN6201497300-00:2015/01/30

(2) Cable Loss:

0.00

(3) Use Port:

High Power RF Input/Output

•

dB

No.	ltem	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 <b>Interface</b> <b>Setting</b> 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.

File Options Help       (6)         Select Device       TCPIP0::127.0.0.1::INSTR       Connect         DUT Settings       Spurious Measurement(Spurious domain)       Save Screen Copy         Model Name       Serial Number       Standard:       ARIB STD-T61 •       Set         Standard:       Other       Set       Standard:       Other         TX Frequency:       150.000000       MHz       Spurious domain (Outer)       Spurious domain (Inner 2)       Spurious do 4         Segment1       Segment2       Segment3       Segment4       Segment6         Start Frequency;       0.009000       MHz       Measure       Start Frequency:       0.150000       MHz         Mod. Wave Meas.       TX CW Meas.       2       Measure       Start Frequency:       0.150000       MHz         Power, Frequency, EVM, Origin Offset       Setting       Setting       NHz       MHz       NHz         RBW:       IHHz       VBW:       WHz       VBW:       VBW:       VBW:       VBW:       VBW:       Detection:
Select Device       TCPIP0::127.0.0.1::INSTR       Connect       Spurious Measurement(Spurious domain)       Save Screen Copy         DUT Settings       Serial Number       Standard:       ARIB STD-T61 • Set       Set         TX Frequency:       10.00       Image: Spurious domain (Outer)       Spurious domain (Inner 2)       Spurious do
DUT Settings       Setting of Spurious Measurement(Spurious domain)         Model Name       Serial Number         Serial Number       TX Frequency:         TX Frequency:       10.00         TX Frequency:       150.000000         MHz       Surious domain (Outer)         Spurious domain (Outer)       Spurious domain (Inner 2)         Segment1       Segment3         Segment3       Segment4         Start Frequency:       0.009000         MHz       Start Frequency:         Nodel Wave Meas.       (2)         Power, Frequency, EVM, Origin Offset       Setting         Spurious (Spurious domain)       Close         Occupied Band Width       Setting
Model Name         Serial Number         TX Fower:         10.00         TX Frequency:         150.000000         MHz         Correction Settings         Loss of TX Route:       0.00         Model Name         Standard:         ARIB STD-T61 ▼ Set         Set Standard:         Other         Spurious domain (Outer)         Spurious domain (Outer)         Spurious domain (Outer)         Segment1         Segment2         Segment3         Segment4         Segment5         Segment6         Measure         Stop Frequency;         Nutow         Spurious domain)         Close         VBW:         VBW:         VBW:         VBW:         VBW:         VBW:         Detection:
Serial Number         TX Power:       10.00         TX Frequency:       150.000000         MHz         Correction Settings         Loss of TX Route:       0.00         Mod. Wave Meas.         TX Mod. Wave Meas.         TX Mod. Wave Meas.         TX CW Meas.         (2)         Power, Frequency, EVM, Origin Offset         Setting         Spurious domain)         Close         VBW:
TX Power:       10.00       W         TX Frequency:       150.000000       MHz         Spurious domain ( Outer ) Spurious domain ( Inner 2 ) Spurious do 4         Correction Settings         Loss of TX Route:       0.00       B       Enable         Image: Correction Settings       Segment1 Segment2 Segment3 Segment4 Segment5 Segment6         Image: Correction Settings       Weasure         Image: Correction Settings       Start Frequency:       0.009000         Image: Correction Setting       Stop Frequency:       0.150000         Image: Correction Setting       Setting       RBW:       1kHz         Image: Correction Setting       Setting       Detection:       Positive
TX Frequency:       150.000000       MHz         Correction Settings       Spurious domain ( Outer )       Spurious domain ( Inner 2 )       Spurious do         Loss of TX Route:       0.00       dB       Enable       Segment1       Segment2       Segment3       Segment3       Segment3       Segment5       Segment6         Weasure       Start Frequency:       0.009000       MHz         Stop Frequency, EVM, Origin Offset       Setting       Stop Frequency:       0.150000       MHz         Spurious (Spurious domain)       Close       VBW:       1kHz       VBW:       VBW:       VBW:         Occupied Band Width       Setting       Detection:       Positive
Correction Settings       Segment1       Segment2       Segment3       Segmen4       Segmen4       Segmen4
Loss of TX Route:       0.00       dB       Enable         ✓ Measure       Start Frequency:       0.009000       MHz         Start Frequency, EVM, Origin Offset       Setting       Start Frequency:       0.150000       MHz         Occupied Band Width       Setting       Detection:       Pasitive       VBW:       3kHz       VBW:
Image: Construct of the setting       Image: Construct of the setting         Image: Construct of the setting       Image: Construct of the setting         Image: Construct of the setting       Image: Construct of the setting         Image: Construct of the setting       Image: Construct of the setting         Image: Construct of the setting       Image: Construct of the setting         Image: Construct of the setting       Image: Construct of the setting         Image: Construct of the setting       Image: Construct of the setting         Image: Construct of the setting       Image: Construct of the setting         Image: Construct of the setting       Image: Construct of the setting         Image: Construct of the setting       Image: Construct of the setting         Image: Construct of the setting       Image: Construct of the setting         Image: Construct of the setting       Image: Construct of the setting         Image: Construct of the setting       Image: Construct of the setting         Image: Construct of the setting       Image: Construct of the setting         Image: Construct of the setting       Image: Construct of the setting         Image: Construct of the setting       Image: Construct of the setting         Image: Construct of the setting       Image: Construct of the setting         Image: Construct of the setting       Image: Construct of the setting
Start Frequency:       0.009000       MHz         Start Frequency:       0.150000       MHz         Multicity:       Network       RBW:       Network         VBW:       3kHz       VBW:       Start Frequency:         Detection:       Positive VEW       Network       Network
Mod. Wave Meas.       TX CW Meas.       2         Stop Frequency:       0.150000         MHz         Attenuator:       Auto         Spurious(Spurious domain)       Close         Occupied Band Width       Setting         Detection:       Positive
Power,Frequency,EVM,Origin Offset     Setting       Spurious(Spurious domain)     Close       Occupied Band Width     Setting
Spurious (Spurious domain)     Close     RBW:     1kHz       Occupied Band Width     Setting     VBW:     3kHz
Occupied Band Width     Setting     VBW:     3kHz      Positive
Detection: Positive -
Adjacent Channel Leakage Power Setting
Sweep time: 40000 ms 🗹 Auto
✓ Judge Limit1 or Limit2
Limit1: 2.500 uW
Limit2: _60 dBc
(2) (4) (5) Stop before sweep
Chack All Chac All Start
Zero Span Measurement Setting
Margin: 3.00 dB
RBW:
VBW:
Detection: RMS V

No.	ltem	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 <b>Setting</b> .
		Hides them if the caption is <b>Close</b> .

### 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.

	Vector Modulat	ion Analysis Me	easu Ano	irement	(1)	Save Sc	reen Copy
(2	2) Common Setting	File:	Ana	IYSIS MEA	surem	ent	
	RCR39_PI4DQP	SK_TCH_DL					•
(3	Common Setting	File Name:					
	Setting of Dev	www.Maaauwamaa					
(4)	Use USB Powe	er Measureme er Sensor, (MA241	Πτ  08Α/	MA24118A)			
(5)	Judge						
	(6) <sub>Limit:</sub>	<b>−</b> 50 % ≤	TX	Power	≤	20	%
	Setting of Free	quency Measur	eme	nt			
(7	) 🗹 Judge			(	(9)		
	(8) Limit:	TX Frequency	±	2.5	ppm 👻	·	
	Setting of EVN	I Measurement					
(10)	Judge						
	(11) Limit:	EVM	≤	10	%		
	Setting of Orig	jin Offset Meas	urer	nent			
(12)	✓ Judge						
(	13) <sub>Limit:</sub>	Origin Offset	≤	-10	dB		

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

No.	ltem	Description					
	Vector Modulation Ana	ysis 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 Modul	lation Analysis Measurer	nent				

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_UL T61_FDMA_PSC_DL T86_CCH_UL T86_CCH_UL T86_TCH_UL T86_TCH_DL User File (Available only when the software you are using is MX269057A.)					
3	Common Setting File Name	<ul> <li>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.</li> <li>This box is available only if both of the following conditions are met: <ul> <li>The software you are using is MX269057A.</li> <li>User File is selected in the Common Setting File box.</li> </ul> </li> <li>Specify the name of the Common Setting file you saved to the following directory on MS2830A.</li> <li>D:\Anritsu Corporation\Signal Analyzer\User Data\Parameter Setting\VMA\Dialog Param</li> <li>For how to save parameters, refer to 3.4.2 "Parameter Save/Recall" in the MX269017A Vector Modulation Analysis Software Operation Manual Operation.</li> </ul>					
	Setting of Power Measu	irement					
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%					
1	Setting of Frequency M	leasurement					

### 3.4 Setting TX Modulation Wave 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 Measur	ement					
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	t 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.

	Spurious Me Setting of S	asurement purious Me	(Spuriou easurem	us domain ent(Spuri	) bus	(1) 🔳 Save domain)	Screen Copy	
(2	) Standard:		ARIE	3 STD-T61	•	<sup>(3)</sup> Set		
(4	) Set Standard:		Othe	er				
	(5)		(6)			(7)		
	Spurious do	r) Spuri	Spurious domain ( Inner 2 ) Spurious do 🕙					
	Segment1	Segment2	Segmen	t3 Segme	nt4	Segment5	Segment6	
	V Measure							
	Start Fi	requency:		0.009000	Ν	/Hz		
	Stop Frequency:			0.150000		/Hz		
	Attenus	tor		Auto	-			

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

No.	ltem	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 Mea	asurement (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 <b>Standard</b> box.					
4	Set Standard	Displays the standard set automatically.					
		If you make any changes to the settings, the standard name is					
		replaced by "Other".					
<b>5</b>	Spurious domain	Refer to 3.4.3.1 Spurious domain (Outer)					
	(Outer)						
6	Spurious domain	Refer to 3.4.3.2 Spurious domain (Inner2)					
	(Inner2)						
7	Spurious domain	Refer to 3.4.3.3 Spurious domain (Inner1)					
	(Inner1)						

### 3.4.3.1 Spurious domain (Outer)

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

Segment1	Segment2	Segmen	t3 Segmer	nt4 Se	egment5	Segment	
(2) 🕼 Measure							
(3) Start F	requency:		0.009000	МН	z		
(4) <sub>Stop</sub> Fi	requency:		0.150000	MH	z		
(5)Attenua	ator:		Auto	•			
(6) <sub>RBW:</sub>			1kHz	•			
(7) <sub>VBW:</sub>			3kHz	•			
(8) Detecti	on:		Positive	•	(10)		
(9) Sweep	time:		40000	ms	Aut	0	
(11) 👿 Judg	ge	(12)	Limit1 or Limit2 -				
(13) Limi	it1:		2.500	uW	1		
(14) Limi	it2:		-60	dBo	dBc		
(15) 📄 Stop	before swee	ep					
(16) 👿 Zero	Span Measu	ıre					
Zero	Span Meas	suremen	t Setting -				
(17) Mar	gin:		3.00		dB		
(18) RB	<b>N</b> :		1kHz	•			
(19) VBV	V:		3kHz	•			
(20) Det	ection:		RMS	•			

No.	ltem			Description	
	Spurious domain (Oute	r)			
1	Segment 1 to 6	Displays the se	tting dial	og boxes of segment 1 to 6 in Outer.	
2	Measure	Sets the measu	rement.		
		Check the box:		Enabled	
		Uncheck the bo	x:	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 fr	equency i	n measurement area.	
		Range:	0.009 to	6000 MHz	
		Default:	Refer to	Table 3.4.3.1-1	
5	Attenuator	Sets the attenu	ator in m	easurement area.	
		Options:	Auto, 0,	2, 4, 6, 58, 60 dB	
		Default:	Auto (Se	egment 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			
7	VDW	Selects the VBW in measurement area			
	V D W	Ontions: 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			
10		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)			
11	T. J	Concreck the box. Manual			
11	Judge	Sets the Pass/Fail evaluation.			
		Uncheck the box: Disabled			
19	(Monu)	Selects the avaluation mode of the limit value			
14	(Interna)	Ontions: 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: $0.001 \text{ to } 1000000 \mu\text{W}$			
		Default: 2.500 µW (Segment 1 to 6)			
14	Limit 2	Sets the limit value for Pass/Fail evaluation in dBc unit.			
		Range: $-100 \text{ to } 0 \text{ dBc}$			
		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)			
		Check the box' Enabled (Default' Segment 1 to 6)			
		Uncheck the box: Disabled			
	Zero Snan Measureme	nt Setting			
17	Margin	Sets the condition for power adjustment (zero span)			
11	margin	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			
1		Default: 3.00 dB (Segment 1 to 6)			

### 3.4 Setting TX Modulation Wave Measurement

No.	ltem	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)
-----------------	-------------------------------	--------

	Start Stop				Zero Span Measurement	
Segment	Frequency (MHz)	Frequency (MHz)	<b>RBW</b> (Hz)	VBW (Hz)	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

Measurement

### 3.4.3.2 Spurious domain (Inner2)

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

Spurious domain ( Outer )	Spurio	us domain (	(Inner 2)	Spurious do
(1) ☑ Upper Measure				
(2) 🔽 Lower Measure				
(3) Span:	± 1	0.000000	MHz	
(4) (exclu	de ±1	.000.000	kHz )	
(5)Attenuator:	A	Auto 👻	]	
(6) RBW:	1	00kHz 👻	j	
(7) VBW:	3	ikHz 👻	j	
(8) Detection:	F	Positive 👻	(10)	
(9) Sweep time:	4	0000	ms 🗹	Auto
(11) 🔽 Judge	(12) L	imit1 or Limit2	2	•
(13) Limit1:	2	.500	uW	
(14) Limit2:	-	60	dBc	
(15)  Zero Span Measure	ment	Setting		
(16) Margin:	cinent	3.00	dB	
(17) RBW		100kHz	•	
(18) VRW		300kHz	-	
		RMS	-	
M Detection:			-	

No.	ltem	Description		
	Spurious domain (Inne	(2)		
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		

### 3.4 Setting TX Modulation Wave Measurement

No.	ltem	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			
7	VBW	Solocts the VBW in measurement area			
		Ontions: 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			
10		Default: 40000 ms			
10	Auto	Sets the sweep time mode to auto/manual.			
		Uncheck the box: Auto (Default)			
11	Judge	Sets the Pass/Fail evaluation			
11	Judge	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 $\mu$ W unit.			
		Range: $0.001 \text{ to } 1000000 \mu\text{W}$			
14	I i mit 0	Default: 2.500 µW			
14		Sets the limit value for Pass/Fall evaluation in dBc unit. $P_{abs} = -100 \text{ to } 0 \text{ dBc}$			
		Default: -60 dBc			
15	Zero Span	Sets whether to perform power adjustment (zero span)			
	Measurement	measurement when the measurement doesn't meet the limit.			
		Check the box: Enabled (Default			
		Uncheck the box: Disabled			
	Zero Span Measuremer	nt 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.	ltem	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).

Spurious domain (	Inner 2) Spu	rious domain	(Inner 1)	
(1) Vpper Measure	9			
(2) Lower Measure	9			
(3)Span:	±	1.000000	MHz	
(4	) (exclude ±	62.500	kHz )	
(5)Attenuator:		Auto 👻	]	
(6)RBW:		3kHz 👻		
(7) VBW:		3kHz 👻		
(8)Detection:		Positive -	(10)	
(9)Sweep time:		40000	ms 🗹 Auto	
(11)	(12)	Limit1 or Limit2	2 -	
(13)Limit1:		2.500	uW	
(14) Limit2:		-60	dBc	
(15)  Detail Meas Detail Meas (10) Margini	urement surement Set	tting		
(16) Margin:		0.00	dB	
(17) Span:		100.000	KHZ	

No.	Item		Description
	Spurious Domain (Inne	r1)	
1	Upper Measure	Sets the upper side	e 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: 0.0	001 to 100 MHz
		Default: 1.0	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	r in measurement area.
		Options: Au	to, 0, 2, 4, 6, 58, 60 dB
		Default: Au	to

No.	ltem	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, RMSDefault:Positive
9	Sweep time	Sets the sweep time in measurement area.Range:1 to 1000000 msDefault: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 $\mu$ W unit.Limit value is adjusted by RBW setting.Adjusted value for RBW = 10 × log (Reference bandwidth / RBW)Range:0.001 to 1000000 $\mu$ WDefault:2.500 $\mu$ W
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 dBcDefault:-60 dBc
15	Detail Measurement	Sets the Detail Measurement when the measurement doesn'tmeet the limit.Check the box:Enabled (Default)Uncheck the box:Disabled
	Detail Measurement Se	etting
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 dBDefault:0.00 dB

### 3.4 Setting TX Modulation Wave Measurement

No.	ltem	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.

Occupied Band Width Me Setting of Occupied Ban	asurement d Width Mea	asure	(1) Save Screen Copy
(2)Standard:	ARIB STD-T61	•	Set
(4) Set Standard:	Other		
(5) Span:	12.500	kHz	
(6)RBW:	30Hz •		
(7) VBW:	30Hz 🔹		
(8) Detection:	Positive -		(10)
(9) Sweep time:	40000	ms	V Auto
(11) Average Count:	1		
(12) <b>⊽</b> Judge			
(13) Limit:	5.800	kHz	

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

No.	ltem	Description		
	Occupied Band Width N	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 Bar	nd 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 <b>Standard</b> 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		

### 3.4 Setting TX Modulation Wave Measurement

No.	ltem	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, RMSDefault: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 100Default: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 kHzDefault:5.800 kHz

Measurement

### 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.

Adjacent Channel Leakage Power Measurement Bave Screen Copy Setting of Adjacent Channel Leakage Power Measurement					
(2) Standard:	ARIB STD-T61	→ <sup>(3)</sup> Set			
(4) Set Standard:	Other				
(5) Span:	40.000	kHz			
(6) RBW:	100Hz 🔹				
(7) VBW:	100Hz 🔹				
(8) Detection:	Positive -	(10)			
(9) Sweep time:	40000	ms 🗹 Auto			
(11) Specified Bandwidth:	4.800	kHz			
(12) Channel Spacing:	6.250	kHz			
(13) 🗹 Judge (14)	Limit1 or Limit2	· · · ·			
(15) Limit1:	2.500	uW			
(16) Limit2:	-60	dBc			

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

No.	ltem	Description		
	Adjacent Channel Leak	age 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 Cha	nnel 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 <b>Standard</b> 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		

### 3.4 Setting TX Modulation Wave Measurement

No.	ltem	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		
	T	Default: Limit I or Limit 2		
15	Limit1	Sets the limit value for Pass/Fail evaluation in $\mu$ W unit.		
		Kange- $0.001$ to $1000000 \mu W$		
10	I: ::0	Default 2.500 $\mu$ W		
16	Limit2	Sets the limit value for Pass/Fail evaluation in dBc unit. $P_{\rm eval}$		
		Kange- $-100$ to 0 dBcDefenderCO dBc		
		Default60 dBc		

3

Measurement

## 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.

Digital Fire and Disaster Prevention Radio Measurement Software (F	or T61/79/86) -
File Options Help	(6)
Select Device TCPIP0::127.0.0.1::INSTR Conner	Spurious Measurement(Out-of-band area)  Save Screen Copy Satting of Save Screen Copy
Model Name	Standard
Serial Number	Standard. ARIB STD-161 V Set
TX Power: 10.00 W -	Set Standard: Other
TX Frequency: 150.000000 MHz	Out of hand area
Correction Settings	
Loss of TX Route: 0.00 dB Enable	Vpper Measure
	Lower Measure
	Span: ± 62.500 kHz
TX Mod. Wave Meas. TX CW Meas. (2)	(exclude ± 8.500 kHz / 2)
Frequency(Counter)	Attenuator:
Spurious(Out-of-band area)	RBW: <u>1kHz</u>
	VBW: 1kHz •
	Detection:  Positive
	✓ Judge Limit1 or Limit2
	Limit1: 2.500 uW
	Limit2: –60 dBc
(3) (4) (5)	☑ Detail Measurement
Check All Clear All Start	

### 3.5 Setting TX CW Measurement

No.	ltem	Description
1	(Check box)	Select the check box(es) for the TX CW measurement item(s) you want to test.
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 <b>Setting</b> . Hides them if the caption is <b>Close</b> .

### 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.

Fred	Frequency Counter Measurement				
Set	Setting of Frequency Counter Measurement				
(1)	Judge				
(2)	Limit:	±	2.5	ppm	

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

No.	ltem	Description		
	Frequency Counter Mea	asurement		
	Setting of Frequency Co	ounter 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.

Spurious Measu Setting of Spur	rement(Out- ious Measur	of-band area) ement(Out-of-	(1) 🗖 Save Screen Copy band area)
) Standard:		ARIB STD-T61	→ Set
)Set Standard:	C	Other	
Out-of-band are	a		
(5) Upper Meas	ure		
(6) Lower Meas	sure		_
(7) Span:		± 62.500	kHz
	(8) (exclude	± 8.500	kHz / 2)
(9) Attenuator:		Auto 👻	
(10) <sub>RBW:</sub>		1kHz 👻	
(11) VBW:		1kHz 👻	
(12) Detection:		Positive -	]
(13) <b></b> Judge	(1	4) Limit1 or Limit2	2
(15) Limit1:		2.500	uW
(16)Limit2:		-60	dBc
(17) 🗹 Detail Me	easurement		

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

No.	ltem	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)			

3

Measurement

No.	ltem	Description
2	Standard	Sets each parameter automatically according to the standardselected in the Standard box.Options:ARIB STD-T61, ARIB STD-T79, ARIB STD-T86DefaultARIB STD-T61
3	Set	Sets the standard selected in the <b>Standard</b> 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 kHzDefault:62.500 kHz
8	(exclude ±[ ] kHz/2)	Sets the excluding span frequency.Range:0.1 to 500 kHzDefault:8.500 kHz
9	Attenuator	Sets the attenuator in measurement area.Options:Auto, 0, 2, 4, 6, 58, 60 dBDefault: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, RMSDefault: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 μWDefault:2.500 μW
### 3.5 Setting TX CW Measurement

No.	Item	Description
16	Limit 2	Sets the limit value for Pass/Fail evaluation in dBc unit.
		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.	ltem	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

## 3.6.3 Progress indication

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

	(Commission Commission Jamain) (Conten Deadu	_
DUT Settinge	MeasuringSpurious (Spurious domain):Outer Ready	
Model Name	Model Name (4)	1
Sorial Number	Measure Date: 2015/04/06 11:27:20	
	Instrument: ANRITSU, MS2830A, 6201056734, 7.02.00	
	TX Route Loss: 0.00 dB	
TX Frequency: 150.000000 MHZ	TX Mod. Wave Meas	Į.
Correction Settings		
Loop of TV Pouto: 0.00 dP C Facture	* TX Frequency 150.00000 MHz	
LOSS OF TX ROULE. 10.00 UB I Enable	[P]TX Frequency Error 0.00 Hz / 0.00 ppm	
	[P]EVM 6.52 %	
W Mad Wave Mass Tri own (1) (2)	[P]Origin Offset -59.63 dB	
A WOU. Wave Weas.   IX CW Meas.   (1) (2)	1	
Power, Frequency, EVM, Origin Offset	* Sourious (Sourious Jamaia)	
Spurious(Spurious domain)	Carrier 150.00000 MHz -0.28 dBm	
	Section Frequency PeakLevel Limit	
<ul> <li>Occupied Band Width</li> </ul>		
Adjacent Channel Leakage Power		
Check All Clear All Stop		
		-

No.	ltem	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

(6)			
* TX Frequency	434.100 000 MHz		(1)
[P]TX Frequency Error	0.12 Hz /	0.00 ppm	(2)
* TX Power	0.95 mW /	-0.20 dBm	(3)
[F]EVM	18.98 %		(4)
[P]Origin Offset	−39.18 dB		(5)

No.	ltem	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 doma	in)		
Carrier	• •	434.100 000 MHz	-0.17 dBm	(1)
Section	Frequency	PeakLevel	Limit	
[-] SDo1	9.564 kHz	-71.98 dBc(-72.15 dB	8m) -90.17 dBm	
[F] SDo1-Z		-61.83 dBc(-62.00 dB	Bm)	
[-] SDo2	150.000 kHz	-75.40 dBc(-75.57 dB	8m) -90.17 dBm	
[F] SDo2-Z		-64.66 dBc(-64.83 dB	Bm)	
[-] SDo3	54.640 MHz	-69.44 dBc(-69.61 dB	3m) -90.17 dBm	
[F] SDo3-Z		-67.26 dBc(-67.43 dB	Bm)	
[-] SDo4	434.680 MHz	3.22 dBc( 3.05 dB	3m) -90.17 dBm	
[F] SDo4–Z		–0.34 dBc( –0.51 dB	Bm)	
[-] SDo5	1302.500 MHz	–55.57 dBc(–55.74 dB	3m) -90.17 dBm	
[F] SDo5-Z		-55.78 dBc(-55.95 dB	Bm)	
[-] SD i 1L	434.000 MHz	-66.85 dBc( -67.02 dB	3m)-105.40 dBm	
[F] SD i 1L-D		-62.08 dBc(-62.25 dB	3m) -90.17 dBm	
[-] SD i 1U	434.176 MHz	-66.22 dBc(-66.39 dB	3m)-105.40 dBm	
[F]SDi1U-D		-62.09 dBc(-62.26 dB	3m) -90.17 dBm	
[-] SD i 2L	427.862 MHz	-75.80 dBc(-75.97 dB	3m) -90.17 dBm	
[F]SDi2L-Z		-68.60 dBc(-68.77 dB	Bm)	
[-] SD i 2U	440.374 MHz	-74.81 dBc(-74.98 dB	3m) -90.17 dBm	
[F] SD i 2U-Z		-68.51 dBc(-68.68 dB	Bm)	
(2) (3)	(4)	(5)	(6)	

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

3 M

Measurement

#### Chapter 3 Measurement

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

(1)

## 3.6.6 TX Modulation Wave: Occupied Band Width

(2)	
[P]Occupied Band Width	5.100 kHz

No.	ltem	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

* Adjacent Channel Leakage Power					
	Offset	Bandwidth	Level	Limit	
[P]	6. 250 kHz (L)	4.800 kHz	-68.12 dBc	-45.00 dBc	
[P]	6. 250 kHz (U)	4.800 kHz	–66. 77 dBc	-45.00 dBc	
(1	) (2)	(3)	(4)	(5)	

No.	ltem	Description
	Adjacent Channel Leak	age 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

# 3.6.8 TX CW Measurement: Frequency (Counter)

(3)			
* TX Frequency	434.099 993 MHz		(1)
[P] TX Frequency Error	12.345 Hz /	0.02 ppm	(2)

No.	ltem	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 a	rea)			
	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	
[-]	0oBL-D	434.095 MHz	-72.34 dBc(-72.49	dBm)	RBW=300Hz	
[-]	0oBL-D	434.095 MHz	-73.23 dBc(-73.38	dBm)	RBW=100Hz	
[F]	0oBL-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]	0oBU-D	434.105 MHz	-80.50 dBc(-80.65	dBm)	RBW=30Hz	
(2)	(3)	(4)	(5)		(6)	

No.	ltem	Description	
	Spurious(Out-of-band a	irea)	
1	Carrier	Displays the carrier frequency and power measurement results. **.*** MHz **.** dBm	
2	(Judge)	<ul> <li>Displays Pass/Fail evaluation.</li> <li>[P]: Pass</li> <li>[F]: Fail</li> <li>[]: Detail measurement was performed because the measured value exceeded the limit.</li> <li>*: Not evaluated.</li> </ul>	
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	

### 3.6.10Total 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.

(2) [F]Total Result: [Fail]

(1)

No.	ltem	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.

Digital Fire and Disaster Prevention Radio Measurement Software (For	T61/79/86) -		×
File Options Help			
Select Device TCPIP0::127.0.0.1::INSTR Connect			
DUT Settings			*
Model Name			
COLLAT MARKET			
Check All Clear All Start			
	(1) Clear Result	(2) (3) Print	- Save

No.	ltem	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.		