CombiView

MX880054A
Signal Generator Application Applet
Operation Manual

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MX880054A
Signal Generator Application Applet
Operation Manual

20 August 2012 (First Edition)
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Revision History:

February 29th, 2020
December 17th, 2021

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 flash drive 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 flash drive and CF memory card).
- Connecting to network
  Connect your computer to the network that provides adequate protection against computer viruses.
- Protection against malware (malicious software such as viruses).
  To connect your computer to network, the following is advised.
  - Activate Firewall.
  - Install important updates of Windows.
  - Use antivirus software.

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- 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)

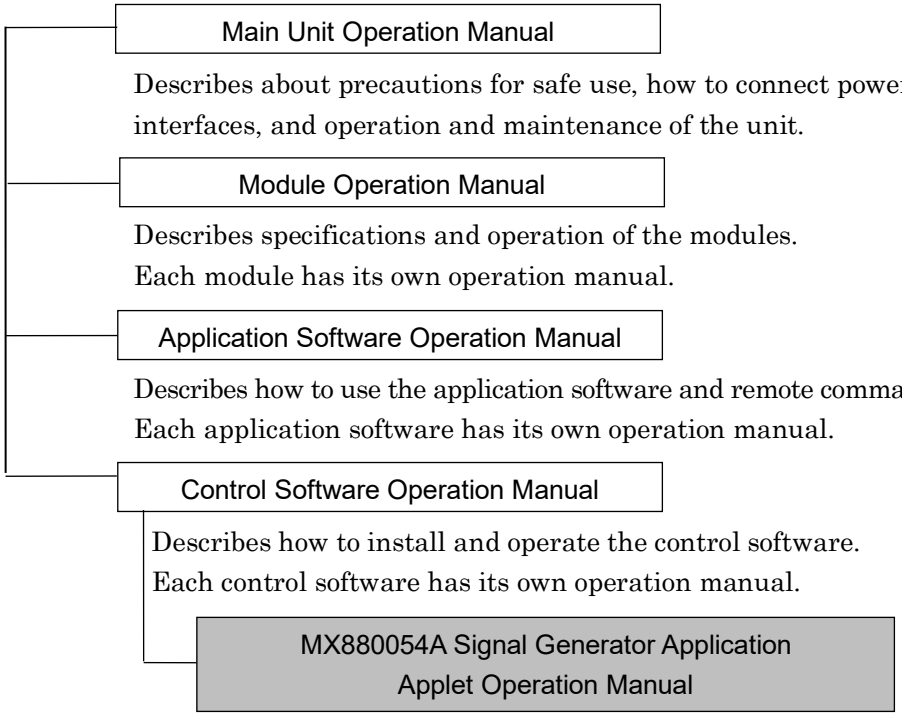
For how to turn off the functions, refer to the operation manual that came with your computer.

About This Manual

This manual mainly describes the operation of the MX880054A Signal Generator Application Applet. Products relevant to the MT8870A Universal Wireless Test Set include:

- MT8870A Universal Wireless Test Set (main unit)
- Modules installed in the MT8870A
- Application software installed in the MT8870A
- Control software installed in a PC to control the MT8870A remotely

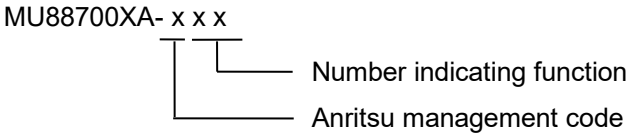
These products are referred to as the "Universal Wireless Test Set Series". The operation manuals of the Universal Wireless Test Set Series consist of separate documents for the main unit, module(s), application software, and control software as shown below. ▭ indicates this manual.



Convention Used in This Manual

Except where there is a good reason to do otherwise, this manual assumes the use of MT8870A and MU887000A. Note that the descriptions in this manual also apply to MT8872A, MU887001A, or MU887002A.
MU887000A/01A means the MU887000A or MU887001A.
Additionally, the Anritsu management code of the options described in this manual is "0" unless there is a reason.

The option number: The option number is indicated by three digits.



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Chapter 1 — Outline

1.1 CombiView Introduction

CombiView is PC application software for the external Control PC used to control the MT8870A Universal Wireless Test Set (hereafter MT8870A).

CombiView allows the user to configure measurements by GUI (Graphical User Interface) and display results.

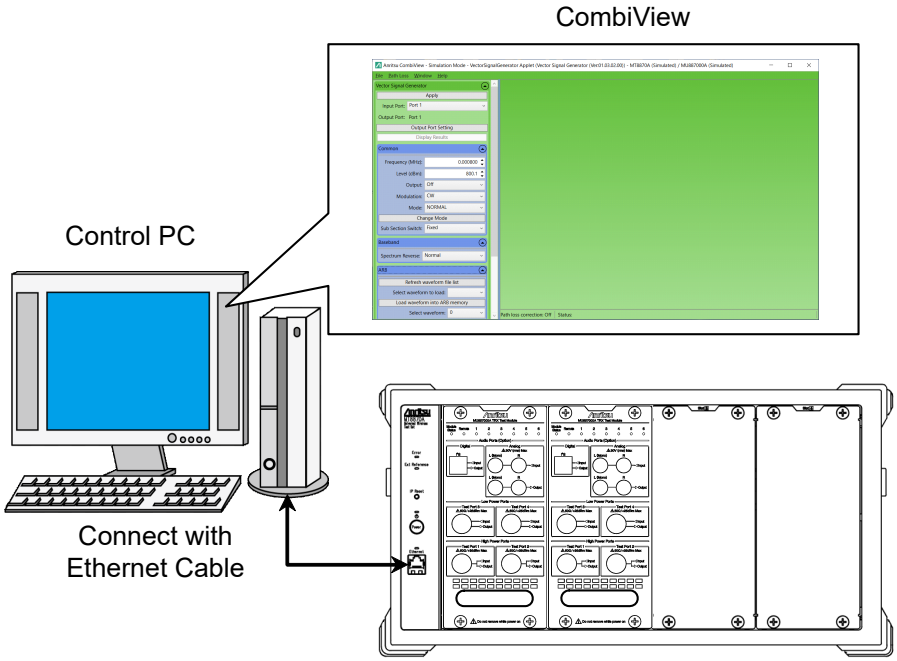

Figure 1.1-1 Ethernet Connection between Control PC and MT8870A

The CombiView application:

- Supports measurement using the MT8870A without creating remote control programs.
- Automatically detects application software registered in the MT8870A.
- Runs in the Windows 7 and Windows 10 OS environments.
- Supports remote control over Ethernet (IPv4) and GPIB.
  Note: MU887002A does not support GPIB.
- Supports multiple measurement standards with additional Applets.

CombiView supports the following Applets.

Table 1.1-1 CombiView Applets

Model/Code	Product Name
MX880051A	Cellular Application Applet
MX880052A	SRW Application Applet
MX880053A	FM/Audio Application Applet
MX880054A	Signal Generator Application Applet
MX880055A	Small Cell Application Applet
MX880056A	IEEE802.15.4 Application Applet
MX880057A	Z-Wave Application Applet

Note: MU887002A does not support MX880053A.

The MX880054A Signal Generator Application Applet (hereafter MX880054A) allows the user to perform signal generator settings at CombiView.

The CombiView applets and the optional applications that each applet supports are shown in the figure below. This manual provides information on the area enclosed by the dotted line.

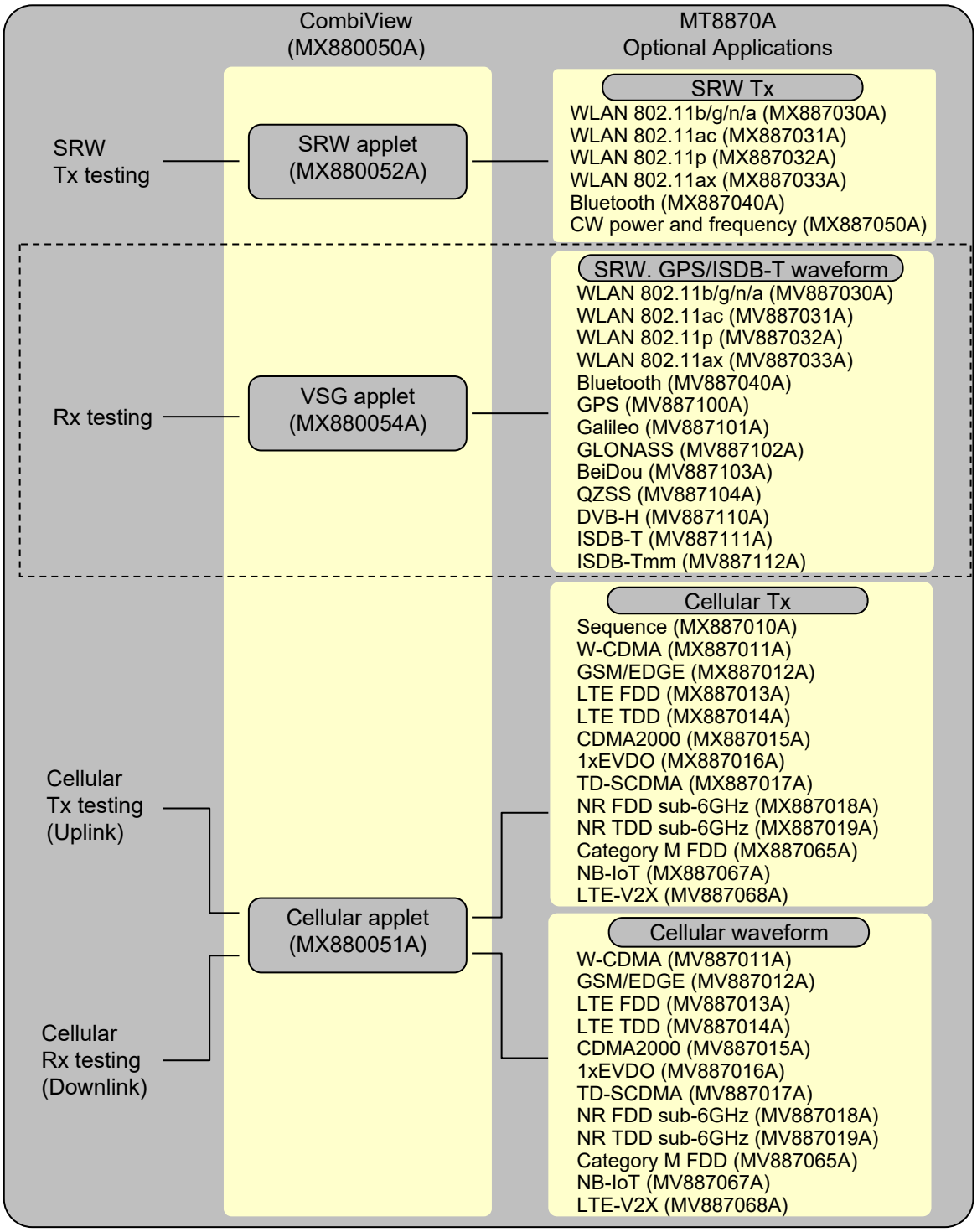

Figure 1.1-2 CombiView Applets and Associated MT8870A Applications Options (1/2)

Note: MU887002A does not support MV887112A.

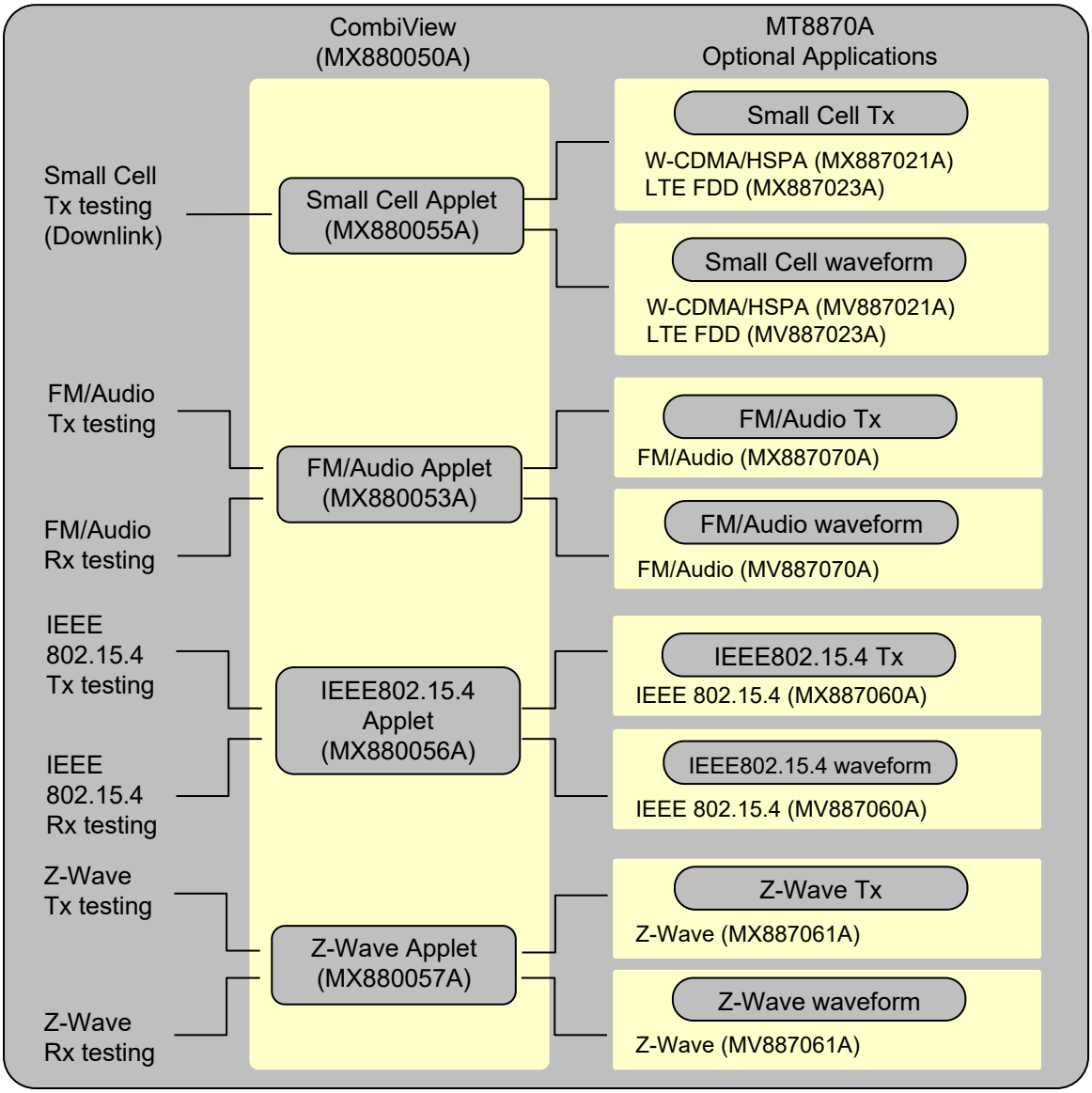

Figure 1.1-3 CombiView Applets and Associated MT8870A Applications Options (2/2)

Note: MU887002A does not support MX880053A, MX887070A, and MV887070A.

An example of the MX880054A screen is shown below. A parameter setting dialog box is displayed when a setting item in the left frame is clicked. The measurement results are displayed on the main window.

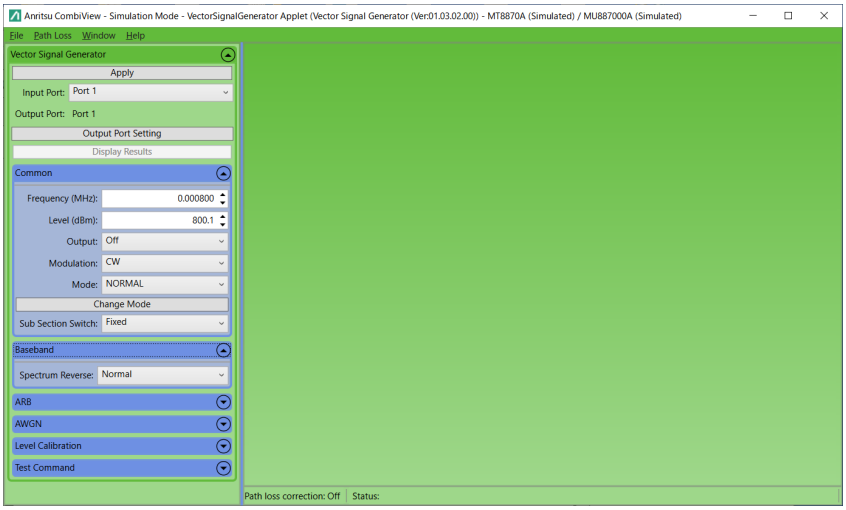

Figure 1.1-4 MX880054A Screen

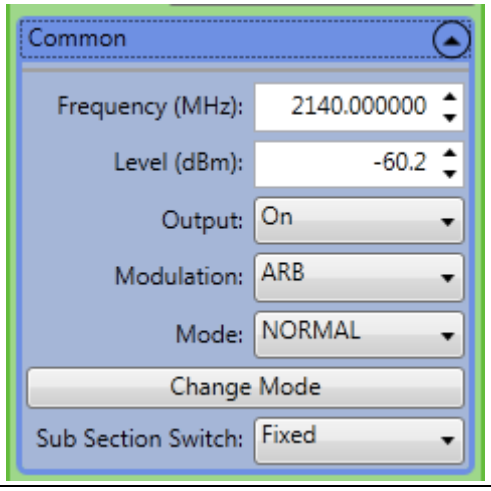

Figure 1.1-5 Parameter Setting Screen

1.2 Composition

The MX880054A composition is listed in the following table.

The electronic files are stored in one or more storage media (DVD, etc.).

Table 1.2-1 Product Composition

Model/Code	Product Name	Remarks
MX880054A	Signal Generator Application Applet	—
W3619AE	MX880054A Signal Generator Application Applet Operation Manual	English

Chapter 2 — Before Use

This chapter explains how to start the MX880054A.

2.1 Operating Environment

This section describes the CombiView operating environment.

Table 2.1-1 Operating Environment

Item	Specification
OS	Windows 7 Service Pack 1, Japanese/English Windows 10 Japanese/English
Display	Resolution: 1024 × 768 or better
Memory	Capacity: ≥ 1 GB
Hard disk free space	≥ 200 MB*1
VISA	NI-VISA*2
.NET Framework	.NET Framework 4.0 (Full-set Version) or .NET Framework 4.5

*1: This is the free space required by the CombiView software. More free space is required to install VISA and NET Framework.
*2: For version compatibility among OS, .NET Framework, and NI-VISA, refer to Table 2.1-3.

Table 2.1-2 Void

Table 2.1-3 Compatibility Table of .NET Framework and NI-VISA

NET Framework	NI-VISA 5.0.3 to 5.2	NI-VISA 5.3 or later
.NET Framework 4.0	✓	✓
.NET Framework 4.5	–	✓

✓: Compatible –: Incompatible

Table 2.1-4 NI-VISA Version

CombiView Package Version	NI-VISA Version
Ver 01.06.01 or older	Version 5.03 to Version 5.4
Ver 01.07.00 or later	Version 5.03 to Version 5.4.1, and Version 14.0 or later

For package version compatibility with CombiView and cellular applet, refer to Table 2.1-5. They may not function properly in combinations that are not shown in the table.

Table 2.1-5 Package Version Compatibility

Package	CombiView	VSG Applet
Ver 01.00.03	1.0.4584.26870	1.0.2.0
Ver 01.02.08	1.2.4702.26073	1.2.8.0
Ver 01.03.04	1.2.4821.28484	1.2.8.0
Ver 01.04.15	1.4.1.0	1.2.9.0
Ver 01.04.16	1.4.3.0	1.2.9.0
Ver 01.06.01	1.4.3.0	1.2.9.0
Ver 01.07.00	1.6.2.0	1.3.0.0
Ver 01.07.09	1.6.10.0	1.3.1.0
Ver 01.12.02	1.6.12.0	1.3.1.0
Ver 01.12.07	1.6.12.0	1.3.1.0
Ver 01.12.09	1.6.12.0	1.3.1.0
Ver 01.13.00	1.6.12.0	1.3.1.0
Ver 02.00.03	2.0.3.0	2.0.3.0
Ver 02.00.05	2.0.5.0	2.0.4.1
Ver 02.00.07	2.0.6.3	2.0.4.1

For package versions compatible with a module to be used, refer to Table 2.1-6.

Table 2.1-6 Compatible Version

Module	Package
MU887000A	All version
MU887001A	Ver 01.04.16 or later
MU887002A	Ver 02.00.03 or later
MU887002A-007	Ver 02.00.05 or later

To use the package of Ver 01.06.01 or earlier, select [.NET Framework 4.0 Languages Support] at NI-VISA installation.

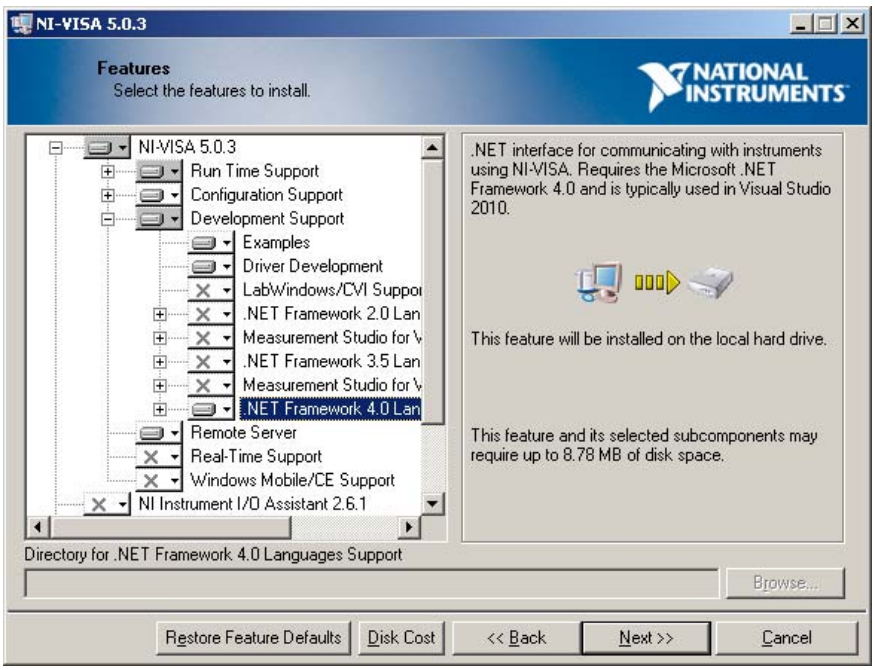

Figure 2.1-1 Selecting .NET Framework4.0 Languages Support

2.2 Connecting to MT8870A

Connect the Control PC having CombiView installed on it to the MT8870A. Refer to Section 2.5 "Connecting Cables" in the *MT8870A Universal Wireless Test Set Operation Manual*.

CombiView detects connected instruments automatically. It is not necessary to set the IP address or GPIB address of connected instruments.

Note: MU887002A does not support GPIB.

2.2.1 Connecting Ethernet cable

Use an Ethernet cable that is category-5 or better and straight-through.

1. Connect the Ethernet cable to the Control PC.
2. Connect the other end of the Ethernet cable to the Ethernet connector on the front or rear panel of MT8870A.

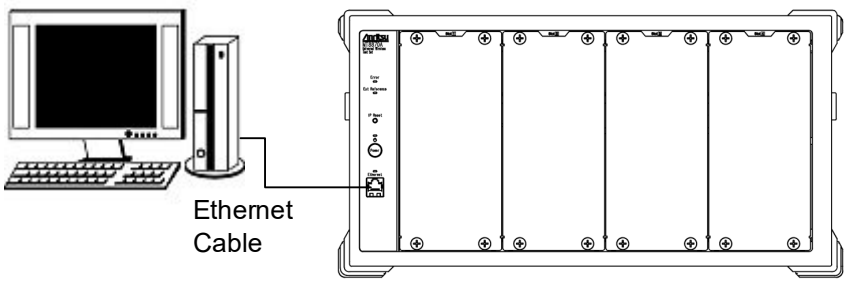

Figure 2.2.1-1 Connecting to Front Ethernet Connector

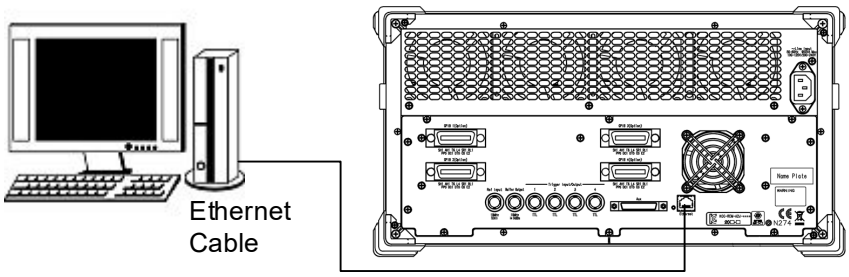

Figure 2.2.1-2 Connecting to Rear Panel Connector

2.2.2 Connecting GPIB Cable

MT8870A-001 adds GPIB connectors for each module to the MT8870A rear panel. Connectors 1 to 4 correspond to slots 1 to 4. A GPIB interface must also be added to the Control PC. The operation of CombiView over the National Instruments GPIB interface has been verified by Anritsu.

1. Connect a GPIB cable to the GPIB interface added to the Control PC.
2. Connect the other end of the GPIB cable to the GPIB connector on the MT8870A rear panel.

2.3 Installing and Uninstalling MX880054A

2.3.1 Installing

To install the MX880054A, run the installation file on the storage media as follows:

1. Open the /Installer/CombiView folder on the storage media.
2. Double-click **CombiViewSetup.msi.**
3. Follow the instructions displayed by the installation dialog.
4. Double-click **CombiView.MT8870x.VSG.Installer.msi.**
5. Follow the instructions displayed by the installation dialog.

2.3.2 Uninstalling

1. At the Windows Control Panel, click **Programs and Features**, and then double-click **MX880054A CombiView VectorSignalGenerator Applet** in the list of **Uninstall or change program**.
2. When you are asked if you really want to uninstall the MX880054A, click **Yes** to uninstall it.
3. Similarly step2, uninstall Anritsu CombiView.

2.4 Starting and Stopping CombiView

Starting CombiView

When using Windows 7: Start CombiView at the Control PC by clicking **Start** > **All Programs** > **Anritsu** > **CombiView** .

When using Windows 10: Start CombiView at the Control PC by clicking **Start** > A column of the app list > **Anritsu** > **CombiView**.

When CombiView is launched, the **Instrument Connection Options** dialog box is displayed.

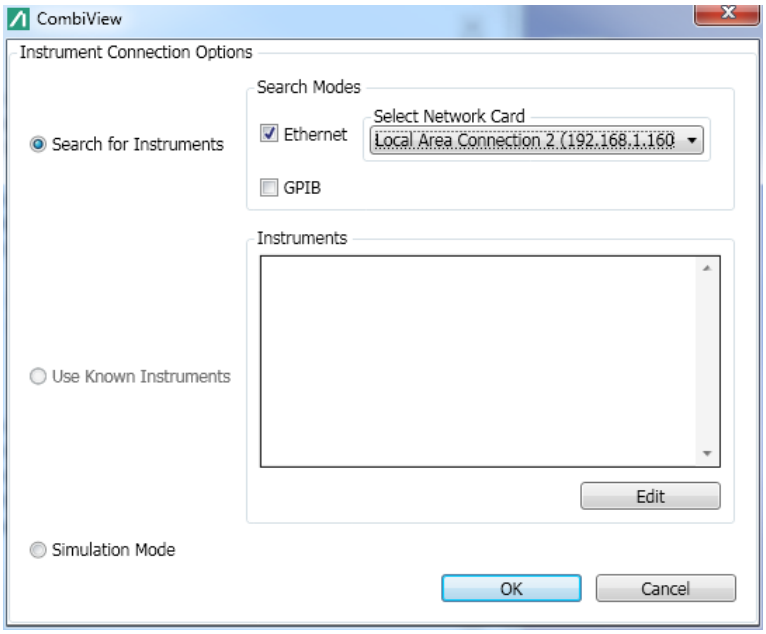

Figure 2.4-1 Instrument Connection Options Dialog Box

In the selected search mode, CombiView searches for MT8870As in the network.

Table 2.4-1 Search Mode for MT8870As

Name	Description
Search for Instruments	Searches for all MT8870As existing in the selected network.
Use Known Instruments	Searches for MT8870As to which the modules with IP addresses specified are installed.
Simulation Mode	Places CombiView offline (the state where there is no communication with connected instruments) without searching for MT8870As.

To edit the IP addresses of known MT8870As, click **Use Known Instruments**, and then click **Edit**.

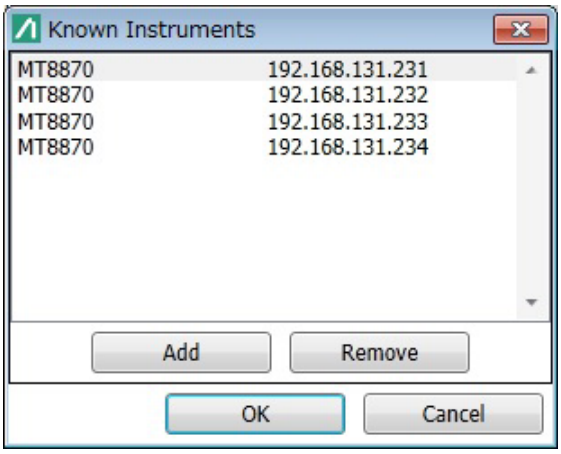

Figure 2.4-2 Known Instruments Dialog Box

To add a known MT8870A, click **Add**, and then enter its IP address. To delete an MT8870A from the list, select it, and then click **Remove**.

Note:	Multiple instances of CombiView cannot be started simultaneously. The following message is displayed if CombiView is already running.

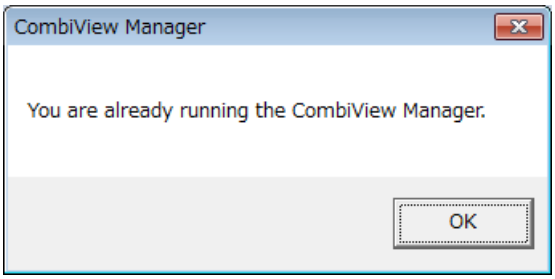

Figure 2.4-3 Message when CombiView is running

Stopping CombiView

Click the **Close** button at the top right corner of the window.

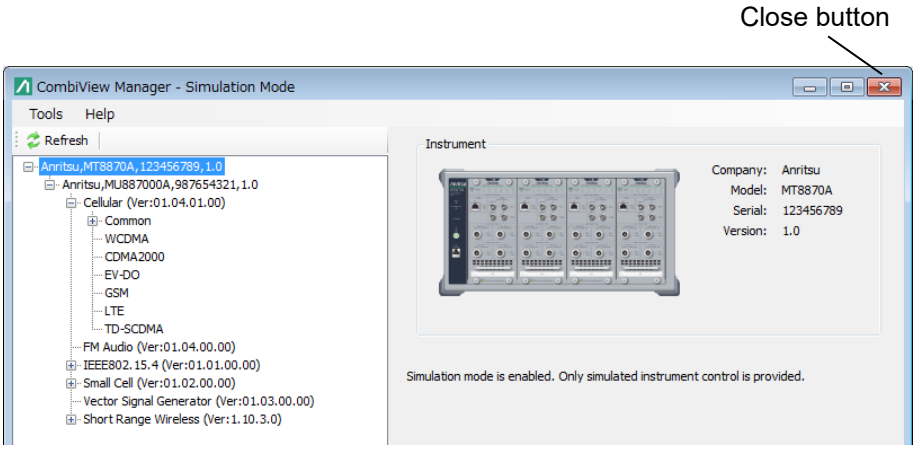

Figure 2.4-4 Close Button

Note:	When the MX880054A stops, the MT8870A remote command language is the Native mode. To change to the SCPI language mode, send the `SYST:LANG SCPI` command.

2.5 Names of CombiView Screens Elements

This section names each part of the CombiView screens.

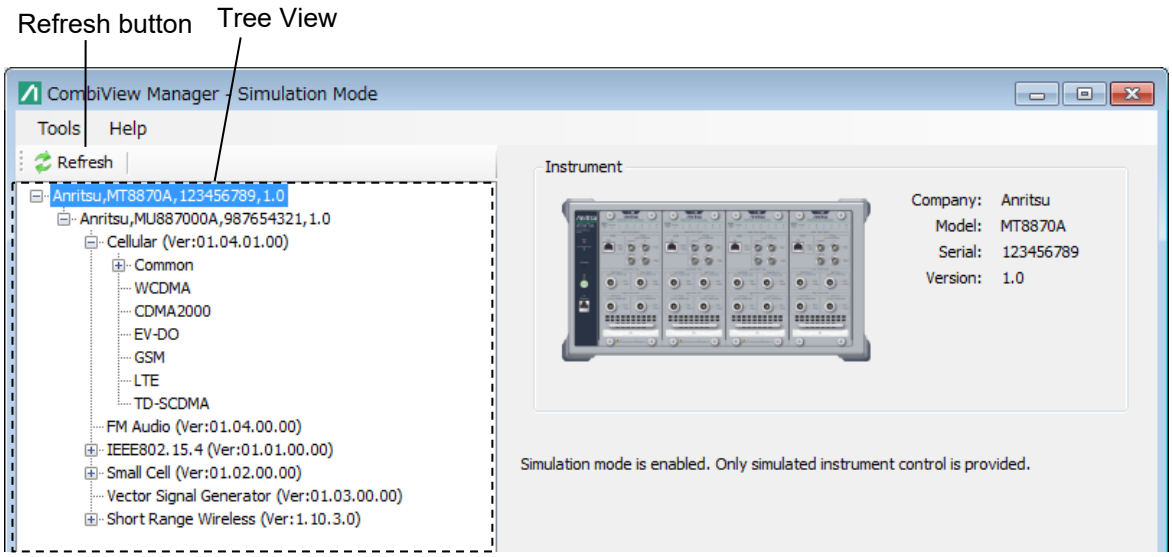

Figure 2.5-1 CombiView Manager Screen

Table 2.5-1 Menu of CombiView Manager Screen

Name	Description
Tools	
Update Connection Options	Opens the **Instrument Connection Options** dialog box to search for MT8870As again in the network.
MT8870A Utility tool	Starts the MX887900A Utility Tool
Help	
About	Displays information about hardware and applets

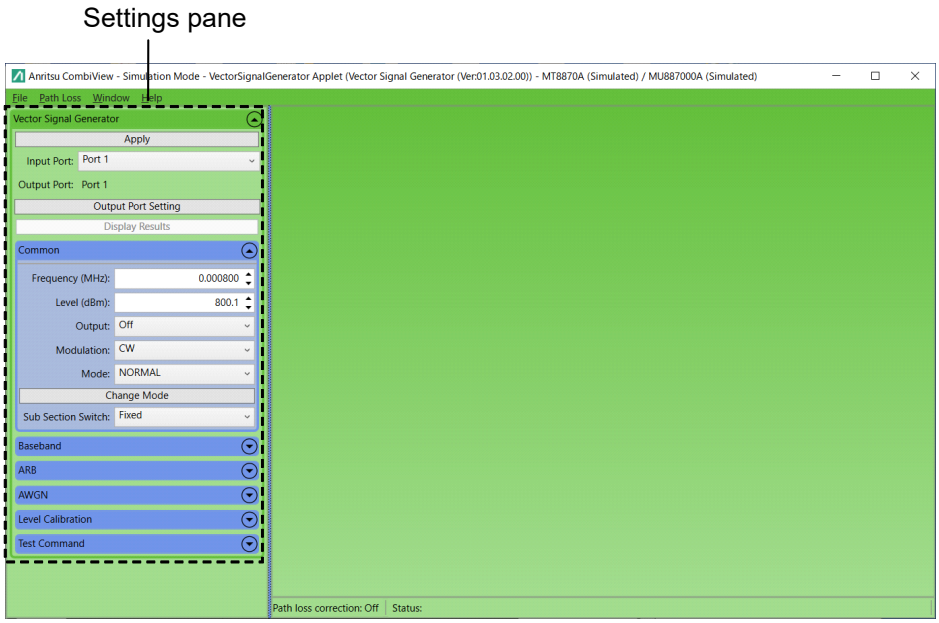

Figure 2.5-2 CombiView Screen

The width of the Settings pane can be adjusted by dragging the vertical bar that separates the Settings pane from the results display area.

Table 2.5-2 Menus of CombiView Screen

Name	Description
File	
Load Settings	Loads the settings pane information from the file.
Save Settings	Saves the settings pane information to the file.
Save Settings as…	Saves the settings pane information to a file specifying the name.
Exit	Closes CombiView screen.
Path Loss	
Configure Correction…	Sets a correction value for power loss of each port.
Apply Correction	Applies the parameter value set by Configure Correction...
Window	
Tile Horizontal	Unavailable for MX880054A.
Tile Vertical	Unavailable for MX880054A.
Reset Window Layout	Unavailable for MX880054A.
Help	
About	Displays information about MX880054A.

Click **Configure Correction** to display the window below. This window allows setting a power loss value from cable, etc. Adding lines to the table enables settings for multiple measurement frequencies.

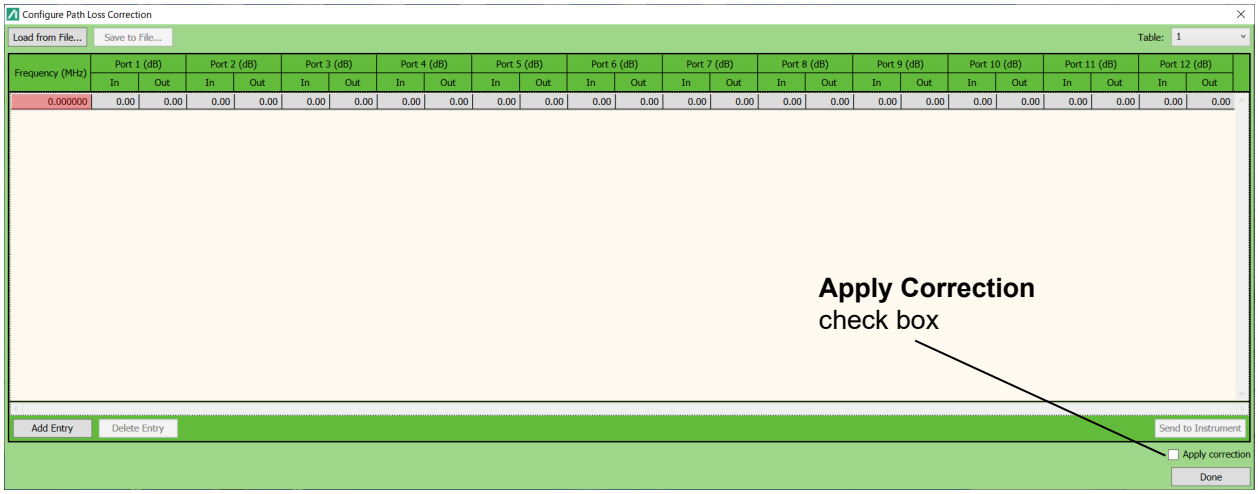

Figure 2.5-3 Configure Path Loss Correction Window

Table 2.5-3 Configure Path Loss Correction Menu

Name	Description
Load from File…	Loads settings from a Path Loss parameter file to the table.
Save to File…	Saves the Path Loss setting parameters in csv format.
Table	Changes the table to set Path Loss. Up to 16 tables can be created.
Add Entry	Adds new lines.
Delete Entry	Deletes the selected lines.
Send to Instrument	Sends the Path Loss settings to the MU887000A.
Done	Ends Path Loss Configure Correction.

Select the **Apply Correction** check box to apply the Path Loss setting. This function is the same as **Apply Correction** in the CombiView menu.

When trying to change a table or close Configure Pass Loss Correction without sending the edited parameters to the MU887000A, the message below is displayed.

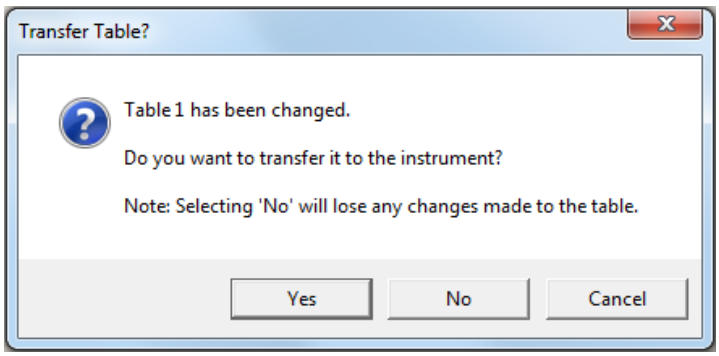

Figure 2.5-4 Transfer Table? Message

When selecting **Yes**, the edited parameters are sent to the MU887000A. When selecting **No**, the parameter are not sent to the MU887000A, and any changes made to the table are deleted.

Chapter 3 — Operation

This chapter describes basic operation of the MX880054A, as well as the items displayed at each measurement and the related remote commands.

3.1 Basic Operations

3.1.1 Selecting measurement items

When CombiView is started, the **CombiView Manager** tree view screen displays information about the detected hardware (MT8870A).

Click the [+] button to open the Vector Signal Generator tree view to set the MX880054A measurements. Uninstalled applications are also shown in the tree view. Double-clicking or right-clicking to start an application displays an alert dialog when its license is not found. The application does not start.

Click the **Refresh** button to update the display.

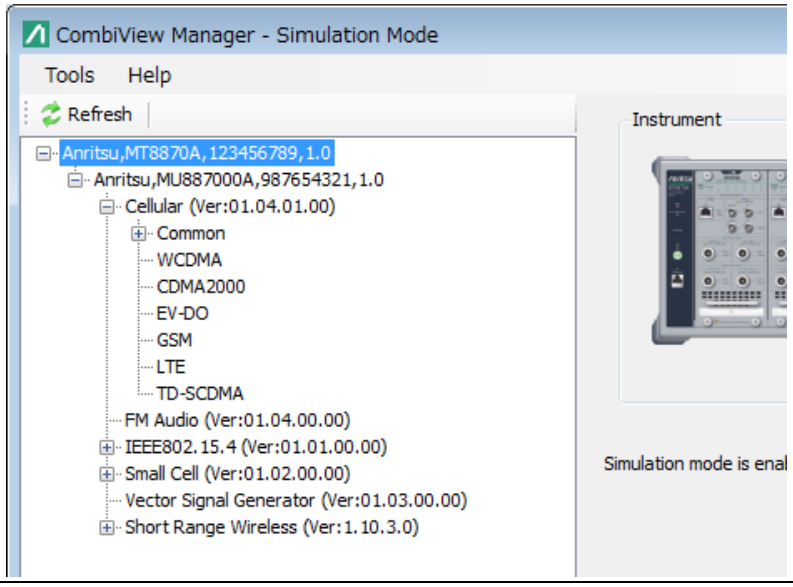

Figure 3.1.1-1 Tree View

1. Double-click Vector Signal Generator in the tree view.
2. Establishing communications with the MT8870A may require several seconds before the **CombiView** screen opens.

   The MT8870A setting parameters are displayed in the settings pane.

3.1.2 Operations at measurement settings pane

The MX880054A option allows the user to configure a signal but not to display the measurement results.

Measurement settings pane

The measurement settings pane consists of text boxes and buttons to set measurement parameters.

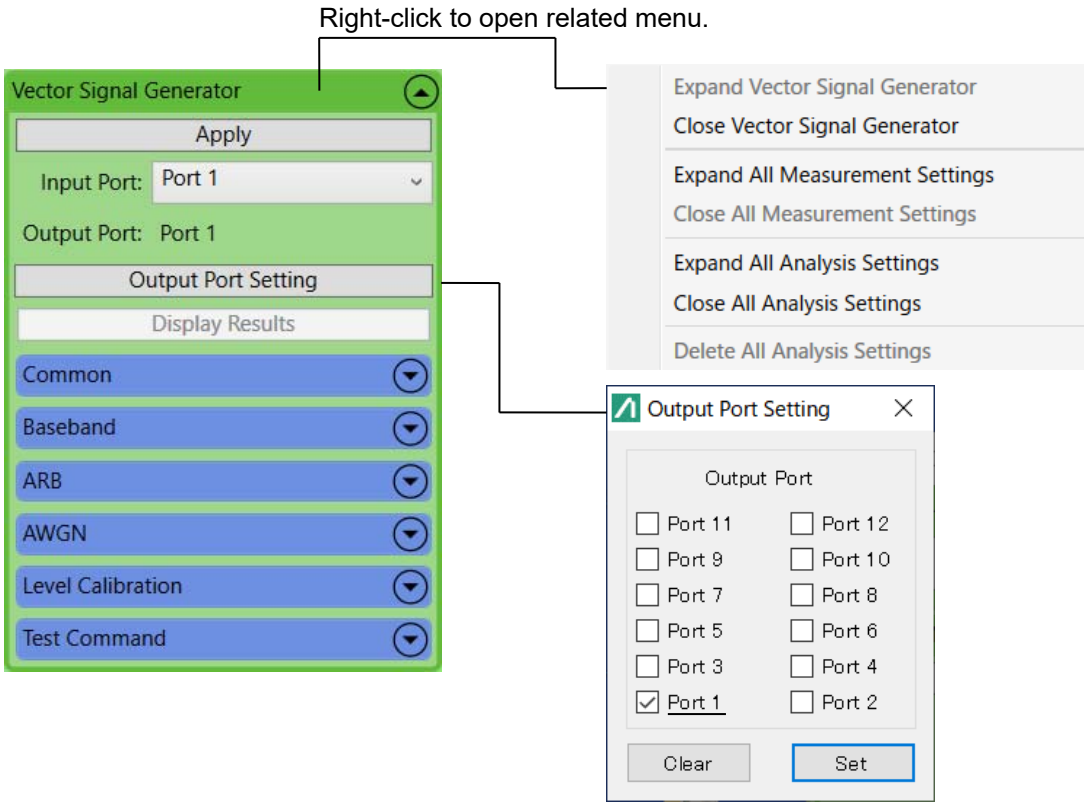

Figure 3.1.2-1 Measurement Settings Pane

The contents of the measurement settings pane vary with the measurement item, but the following buttons are always displayed.

Table 3.1.2-1 Measurement Settings Pane Buttons

Name	Description
Apply	Sends settings at settings pane.
Input Port*	Sets MU887000A RF signal input port. Port 1 to Port 12: Input ports, Off: No any input ports This setup does not influence the function of VSG.
Output Port*	Shows MU887000A VSG RF signal output port. Port 1 to Port 12: Output ports, Broadcast: Outputs from multiple ports
Output Port Setting	Sets MU887000A VSG RF signal output port Set: Sets the selected output ports. Clear: Clears all the selected output ports.

*: For MU887000A; Port1 and Port2 can be set for both input and output.
Port 3 and Port 4 can be set for either input or output.
For MU887001A; Port 1 to Port 4 can be set for both input and output.
For MU887002A; Port 1 to Port 12 can be set for both input and output.

3.2 Vector Signal Generator

Refer to Chapter 4 “Vector Signal Generator” in the *MU887000A TRX Test Module Operation Manual* for a description of the Vector Signal Generator function.

This section describes the Vector Signal Generator operations and displays.

3.2.1 Measurement settings

The Vector Signal Generator measurement settings pane is shown below. Click the ▲ and ▼ buttons to change the parameter settings.

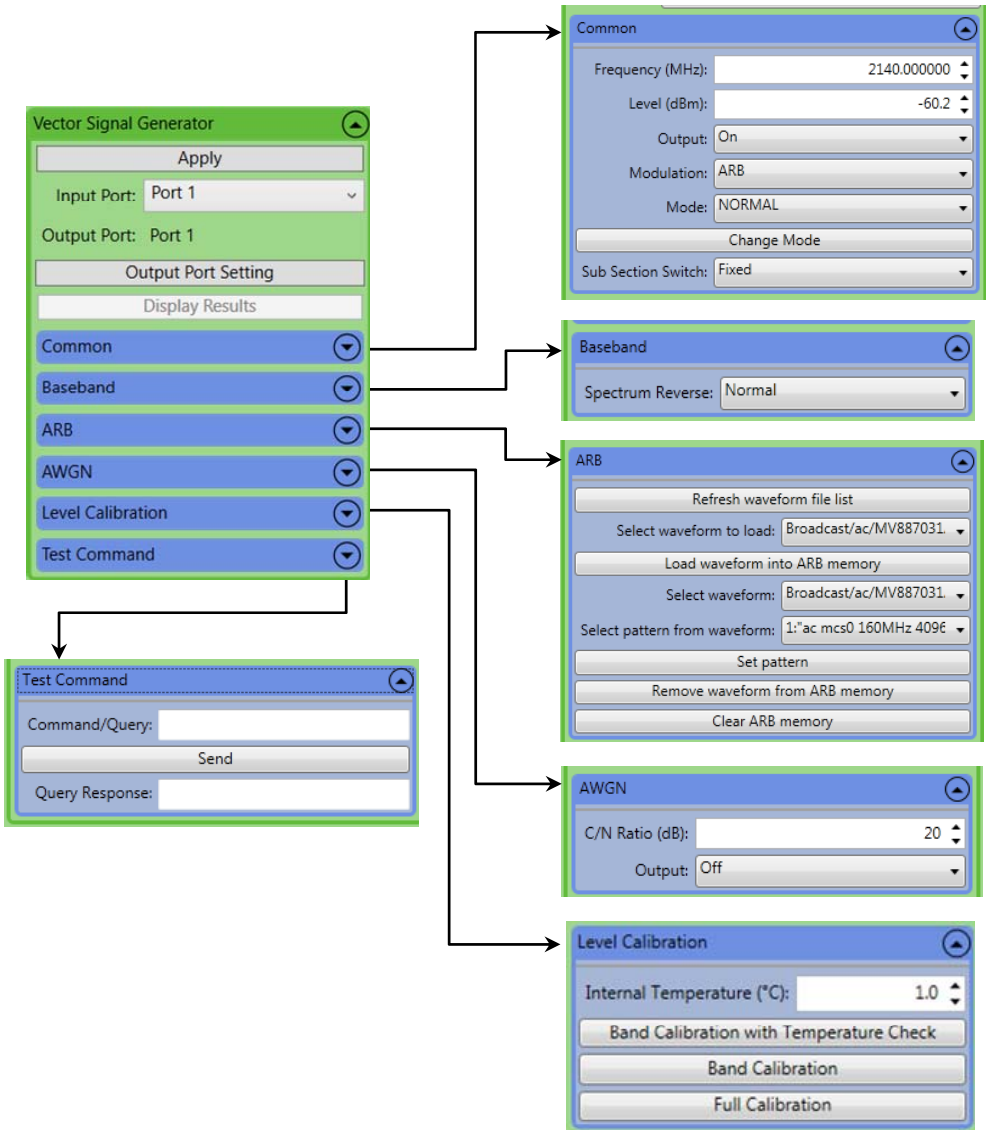

Figure 3.2.1-1 Vector Signal Generator Measurement Settings Pane

3.2.2 Setting and generating signal

Set the signal to be generated as described below. This function does not support measurement.

Waveform pattern

Set an arbitrary waveform pattern as follows:

1. Click **ARB** to open the **ARB** dialog.
2. Click the **Refresh waveform file list** button.
3. Select a file from the **Select waveform to load** list.
4. Click the **Clear ARB memory** button to remove files from memory.
5. Click the **Load waveform into ARB memory** button to load the selected waveform file into the ARB memory.
6. Select the waveform pattern to be loaded from the **Select waveform** list box, and the **Select pattern from waveform** list.
7. Click the **Set Pattern** button to set the selected waveform pattern as the VSG modulation pattern.

The status indication lamp 2 of MU887000A blinks during the file loading.

When the file loading error occurs, the status indication lamp 2 of MU887000A is lit in red.

In that case, query the cause by using :SOURce:GPRF:GENerator:ARB:FILE:LOAD? command.

For the command explanation, refer to Chapter 5 “SCPI Command Reference” in *the MU887000A TRX Test Module Operation Manual*

Setting VSG Signal

1. Select the port from Output Port.
   The Input Port setting does not affect VSG operation.
2. Click the **Common** button to open the **Common** dialog and set the parameters.
   If the **Mode** parameter has been updated, click the **Change Mode** button to send the **Mode** parameter to the MU887000A.
3. Click the **Frequency** button to open the dialog and set the frequency.
4. Click the **Level** button to open the dialog and set the output level.
5. If **Modulation** is set to **ARB**, click the **Baseband** button to open the dialog and set whether to execute IQ Inversion.
6. If **Modulation** is set to **ARB**, click the **ARB** button to open the dialog box and set the waveform pattern. .
7. Click the **Sub Section Switch** button to set the subsection.
8. To add AWGN to the signal, click the **AWGN** button to open the dialog. Then set **C/N Ratio** and set **Output** to On.
9. Click **Apply** to send the set parameters to the MU887000A.

Click **Level Calibration** to display the buttons to execute calibrations.

Sending commands

To execute other commands not provided in the measurement settings pane and query the MU887000A status:

1. Click the **Test Command** button at the measurement settings pane to open the **Test Command** dialog.
2. Input the command in the **Command/Query** text box.
3. Click the **Send** button. When the query is sent, the response is displayed in the **Query Response** text box.

Notes:	• Clicking the **Apply** button does not send the command in the **Command/Query** text box. • An error code and error message pop up when the sent command is not correct. An error code and error message appear in the Query Response field when the sent command is not correct. For details of ErrorCode-format messages, refer to the description of the :SYSTem:ERRor? command in the *MU887000A TRX Test Module Operation Manual*. • Do not switch the language mode of remote control commands. If the language mode is switched, a command error occurs in subsequent applet operations.

If the sent command is not correct, the status lamp of the MU887000A blinks. For the explanation of the status lamp, refer to Appendix D "Status Indication of lamps" in *the MU887000A TRX Test Module Operation Manual*.

3.2.3 Related SCPI commands

The related SCPI commands for remote control are described below. For detailed descriptions of the commands, refer to Chapter 5 “SCPI Command Reference” in the *MU887000A TRX Test Module Operation Manual*.

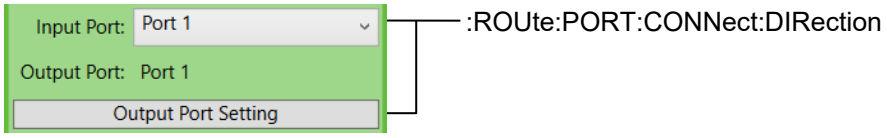

Figure 3.2.3-1 Measurement Settings Pane (Input/Output Port)

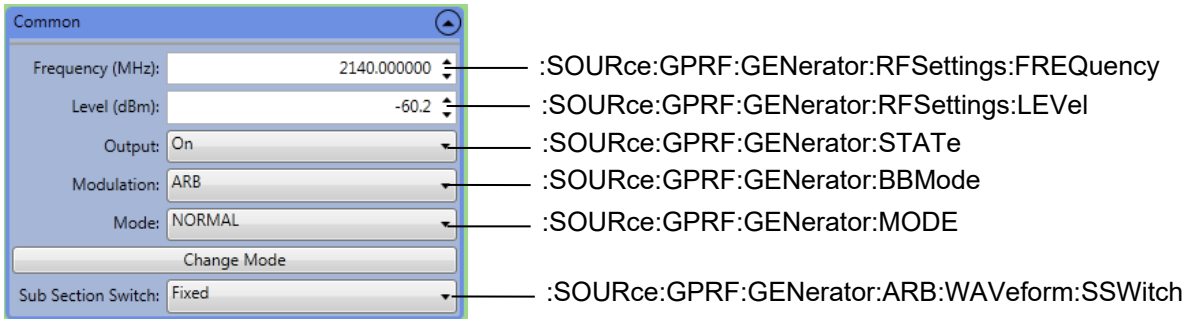

Figure 3.2.3-2 Measurement Settings Pane (Common Dialog)

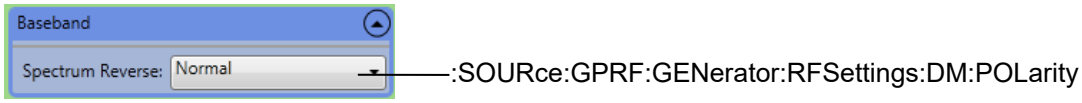

Figure 3.2.3-3 Measurement Settings Pane (Baseband Dialog)

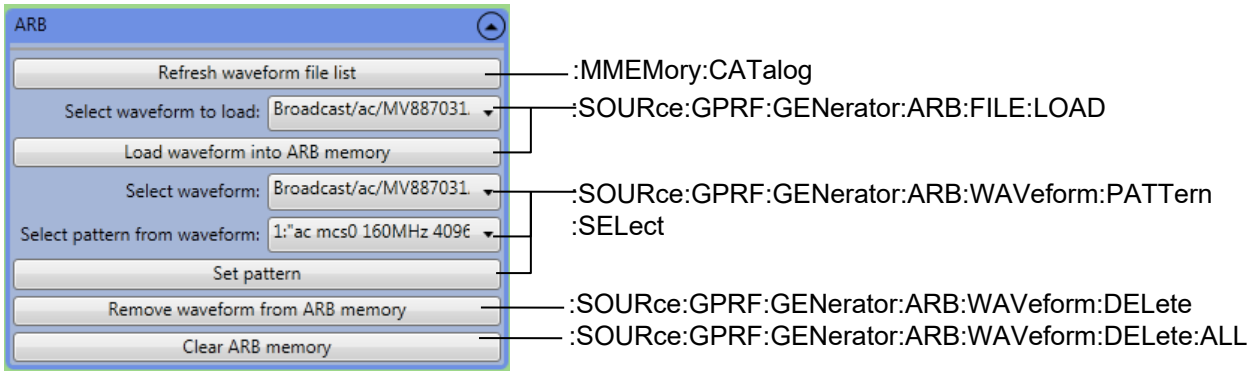

Figure 3.2.3-4 Measurement Settings Pane (ARB Dialog)

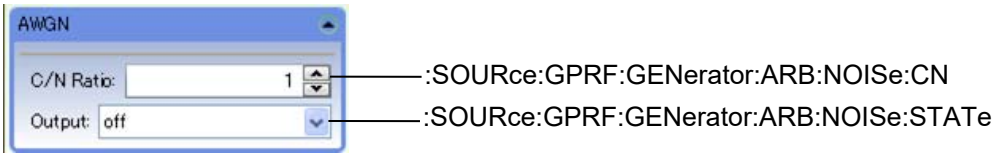

Figure 3.2.3-5 Measurement Settings Pane (AWGN Dialog)

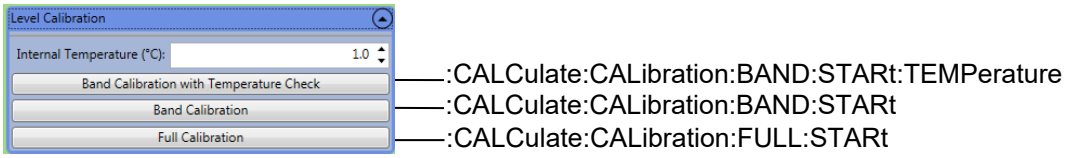

Figure 3.2.3-6 Measurement Settings Pane (Level Calibration)