MD1260A
40/100G Ethernet Analyzer
Add-on Function
Operation Manual

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 MD1260A 40/100G Ethernet Analyzer Operation Manual. Please also refer to this document before using the equipment.**
- **Keep this manual with the equipment.**

ANRITSU CORPORATION

Document No.: M-W3483AE-2.0

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MD1260A
40/100G Ethernet Analyzer
Add-on Function Operation Manual

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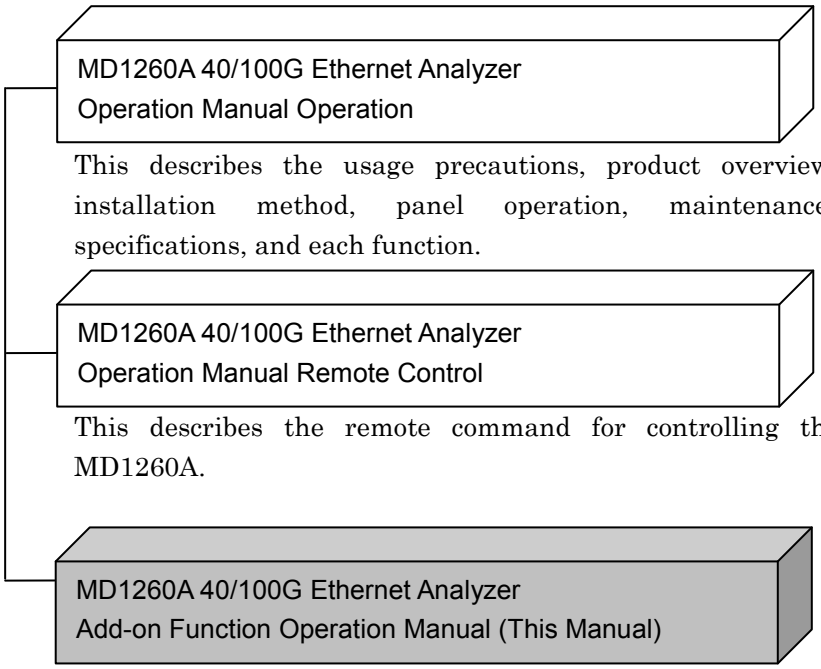
About This Manual

The manuals of the MD1260A 40/100G Ethernet Analyzer are configured by the following two manuals.



This manual explains the Add-on function. For the connection of the power source and peripheral devices, panel operation, and maintenace, refer to the following manual, refer to the MD1260A 40/100G Ethernet Analyzer Operation Manual (W3406AE).

This operation manual assumes the reader has the following information:

- The reader has read through the MD1260A 40/100G Ethernet Analyzer Operation Manual.

Table of Contents

IV.

Chapter 1 Outline of Add-on Function

This chapter explains the Add-on function and its common operations.

1.1 What is Add-on Function?

The basic MD1260A applications are listed below.

- MD1260A-001 100G Ethernet
- MD1260A-002 OTU4
- MD1260A-003 40G Ethernet
- MD1260A-004 OTU3
- MD1260A-005 ODU4-100GbE Mapping
- MD1260A-006 ODTU4.1-ODU0-GbE Mapping
- MD1260A-007 ODTU4.8-ODU2e-10GbE Mapping

MD1260A-002, MD1260A-005, MD1260A-006, and MD1260A-007 are collectively called OTU4 application.

The Add-on function is used with a combination of basic applications for a specific purpose.
The Add-on functions are listed in the following table.

Table 1.1 -1 Add-on Function

Name	Function	Required Option
RFC2544 test	Measures Frame Loss Rate, Throughput, Latency, and Back-to-Back Frames by method in RFC standard	MD1260A-001 or MD1260A-003
CFP analysis function	Reads and writes MDIO register of CFP and sets/displays each register value of CFP.	MD1260A-031
Lambda Grouping Measure of 100 GBASE	At 100BASE-LR4/ER4 measurement, displays measurements for each lane of CAUI and PSC as four groups Transmission characteristics for each wavelength can be confirmed by concurrence between 4 groups and each wavelength lane	MD1260A-001 or MD1260A-002
Service Disruption	Displays communication interruption time due to loss of Ethernet frame	MD1260A-001 or MD1260A-003

For example, although the same results can be obtained using the basic RFC2544 test screens, these operations take time and effort.
Programming a series of panel operations using the Add-on function performs measurement simply by setting the minimum test conditions and starting measurement.

1.2 Add-on Function

1.2.1 Display

The Add-on function button is displayed at the second-from-bottom button of the Top Menu. The name of the Add-on function is displayed on the button.

Figure 1.2.1-1 Example of Displaying Top Menu

Note:

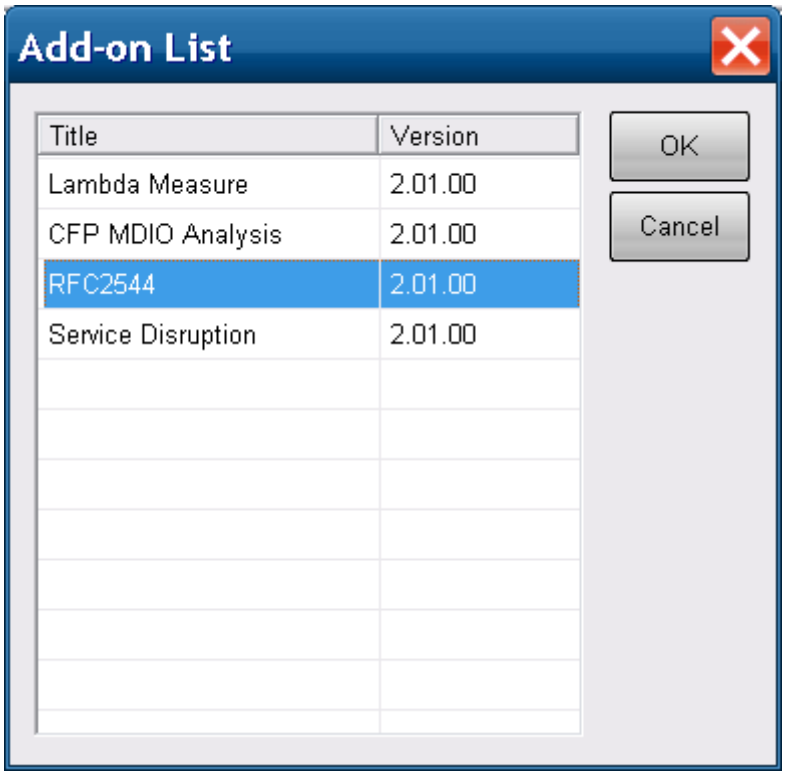
Switching the display to another application during the RFC2544 test or others using the Add-on function does not provide correct measurement results with the Add-on function.

1.2.2 Switching

The Add-on function can be switched at the System Menu.The Add-on function after switching is displayed on the top menu.

☞ MD1260A 40/100G Ethernet Analyzer Operation Manual
Section 3.2.2 System Menu

1. Touch [System Menu].
2. Touch [Add-on Select].
   The Add-on function list is displayed.



3. Touch the name of the Add-on function.
4. Touch [OK]. The button name on the top menu is changed.

Note:

Do not switch the Add-on function during measurements by the Add-on function such as the RFC2544 test.If the Add-on function is switched, the measurement by the Add-on function will be stopped. In this case, the measurement results are not saved.

1.3 Screen Layout

This section explains the screen layout of the Add-on function.

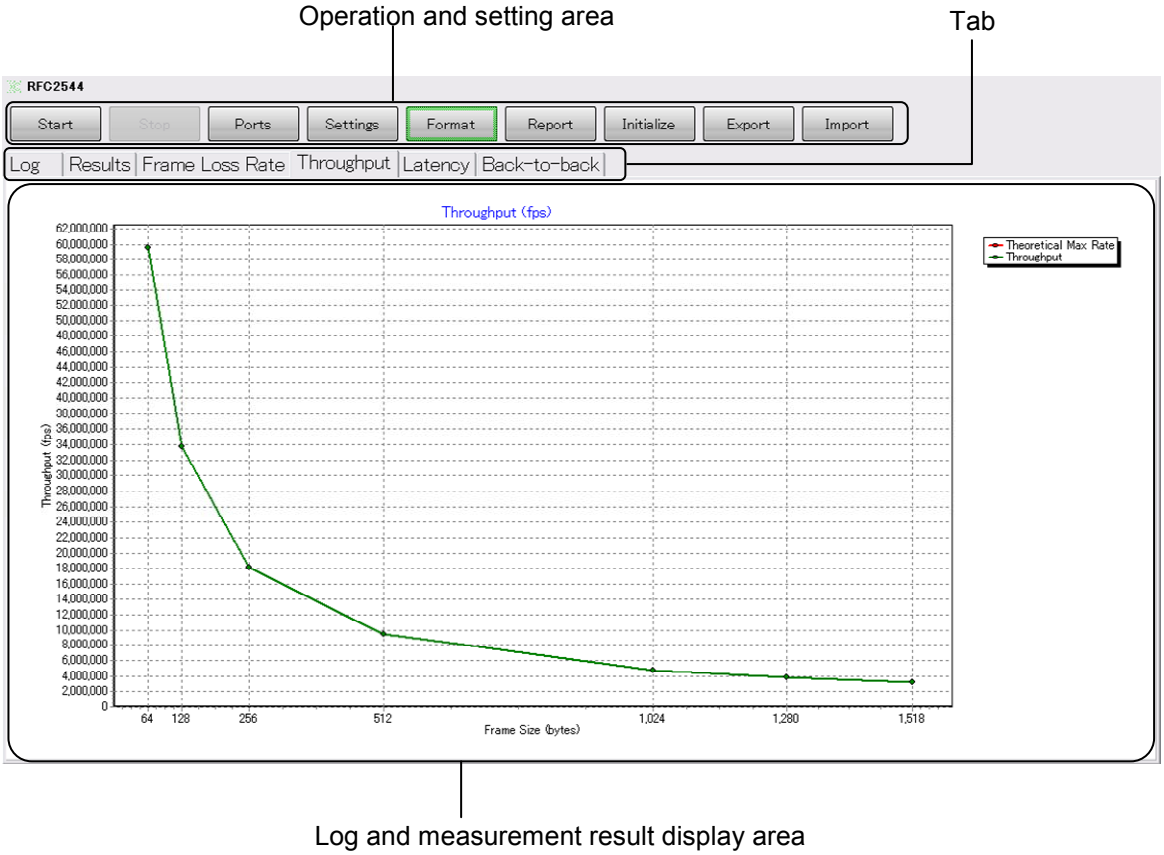


Figure 1.3-1 Add-on Function (RFC2544 Test) Screen Display

Table 1.3-1 Display Item of Add-on Function Screen

Name	Explanation
Operation/setting area	Sets Add-on function conditions, starts/stops operation and displays operating files
Tab	Switches screen
Log/result display area	Displays Add-on function processing and test results The displayed details vary with the tab.

Copying Test Results

When performing the operation with the mouse connected, right-click the selected tab to copy the measurement results to the clip board.
However, the measurement results are not copied to the clip board by right-clicking the graph display tab.

1.4 Abbreviations

The abbreviations used in this manual are listed in Table 1.4-1.

Table 1.4-1 Abbreviation

Abbreviation	Formal Name
100GbE	100 Giga bit Ethernet
40GbE	40 Giga bit Ethernet
APD	Avalanche Photo Diode
BER	Bit error rate
CAUI	100 Gigabit Attachment Unit Interface
CFP	100G Form-factor Pluggable
CTRL	Control
FAWS	Fault, Alarm, Warning, and Status
HW	Hardware
IFG	Inter Frame Gap
LOL	Loss of lock
LOS	Loss of signal
LOSF	Loss of signal functionality
MDIO	Management Data Input/Output
MOD	Module
NVR	Non Volatile Register
NW	Network
PCS	Physical Coding Sublayer
PLD	Programmable Logic Device
PRBS	Pseudo Random Binary Sequence
RFC	Request for comments
RX	Receiver
SOA	Solid-State Optical Amplifier
TEC	Thermoelectric Cooler
TX	Transmitter

Chapter 2 RFC2544 Test

This chapter explains the RFC2544 test screen and operation method. The Add-on function is available when the RFC2544 test is performed using the 40 GbE/100 GbE application.

2.1 Outline of RFC2544

The RFC2544 automatically tests the following items according to RFC 2544 Benchmarking Methodology for Network Interconnect Devices.

1. Throughput
2. Latency
3. Frame Loss Rate
4. Back-to-Back Frames

Multiple test items can be executed when starting single operation. Moreover, the tests and results for various frame sizes can be output at one time.

Neither System Recovery nor Reset described in RFC2544 is supported by the RFC2544 test of this Add-on function.

RFC2544 can be tested in both directions using two MD1260A units.

MD1260A 40/100G Ethernet Analyzer Operation Manual
Chapter 7 Multiport Function

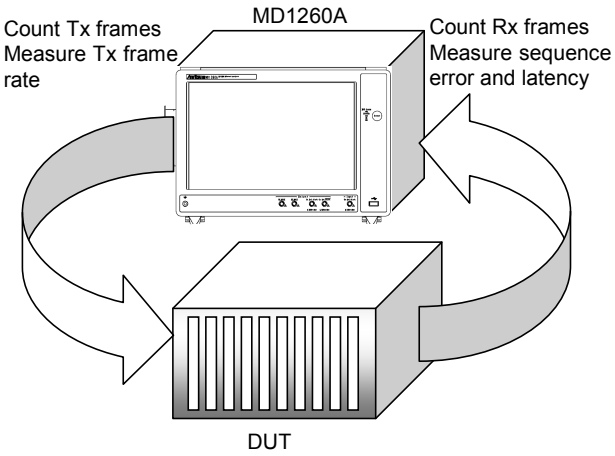


Figure 2.1-1 Test System for One MD1260A

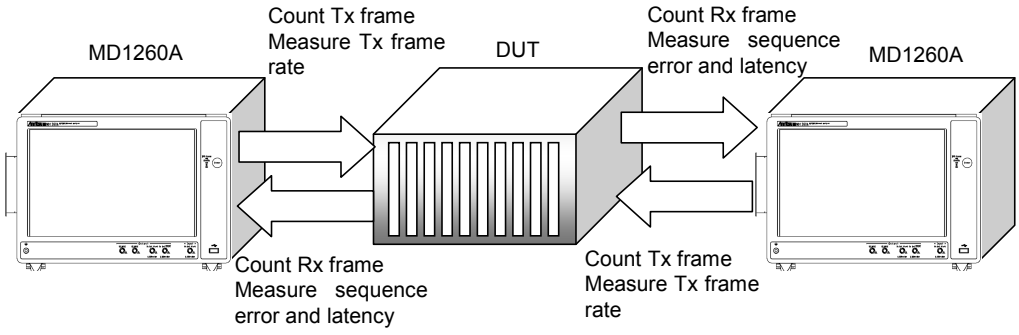


Figure 2.1-2 Test System for Two MD1260A Units

2.1.1 Frame Loss Rate Test

At Frame Loss Rate test, the frame rate is changed and the frame loss generation ratio of the DUT is measured.

The Frame Loss Rate is calculated using the following expression.

$$R = \frac{Nt - Nr}{Nt} \times 100$$

R: Frame Loss Rate (%)

Nt: Transmitted number of frames

Nr: Received number of frames

Test Procedure

1. Send the test frames to the DUT at the 100% frame rate at the specified frame size during the Duration setting time.
2. Measure the number of test frames received by the DUT and transmitted number of test frames and calculate the Frame Loss Rate.
3. When Frame Loss occurs, the frame rate is reduced to less than value set at Resolution for Frame Rate. Send the test frame during the Duration setting time and repeat steps 1 to 2.
   Go to step 4 when the Frame Loss Rate is 0%.
4. Change the test frame size and repeat steps 1 to 3.
   Perform the test for the following frame sizes (bytes).
   64, 128, 256, 1024, 1280, 1518

The Add-on function has the setting of the frame size described in RFC2544 as the default value (Refer to Figure 2.3.2-1 "Settings Screen").

2.1.2 Throughput Test

At Throughput test, the maximum frame rate with no frame loss at the DUT is measured. Refer to Section 2.1.1 Frame Loss Rate measurement.

Test Procedure

1. Decide the transmission frame rate to R_1.
   If there is the test result of the Frame Loss Rate, the minimum rate generating frame loss is set to R_1.
2. Send test frames to the DUT at the R_1 frame rate at the specified frame size for the fixed time.
3. Measure the sequence error of the received test frame, and check the occurrence of frame loss.
   Go to step 4 if there is frame loss.
   Go to step 11 as R_1 is set to the Throughput measurement result if there is no frame loss.
4. Decide the transmission frame rate to R_2.
   Set the value set at Resolution for Throughput to R_2.
5. Send test frames to the DUT at the R_2 frame rate at the specified frame size for the fixed time.
6. Measure the sequence error of the received test frame, and check the occurrence of frame loss.
7. Decide the transmission frame rate to $R_3=(R_1+R_2)/2$.
8. Send test frames to the DUT at the R_3 frame rate at the specified frame size for the fixed time.
9. Measure the sequence error of the received test frame, and check the occurrence of frame loss.
   Set to $R_1=R_3$ if there is frame loss.
   Set to $R_2=R_3$ if there is no frame loss.
10. Go to step 7 if R_1-R_2>Resolution for Throughput is set.
    If $R_1-R_2\leq$Resolution for Throughput is set, R_2 is set as the Throughput measurement result.
11. Change the frame size of test frame and repeat steps 1 to 10.
    Perform the test for the following frame sizes (bytes).
    64, 128, 256, 1024, 1280, 1518

The measurement results are displayed as a graph or table.

The Add-on function has the setting of the frame size described in RFC2544 as the default value (Refer to Figure 2.3.2-1 "Settings Screen").

2.1.3 Latency Test

At Latency test, the time when the DUT in the state of the Throughput load processes the frame is measured.
In RFC1242, Latency is defined according to the type of the DUT as follows. The MD1260A measures the Latency of bit forwarding devices.

> For store and forward devices:
> The time interval starting when the last bit of the input frame reaches the input port and ending when the first bit of the output frame is seen on the output port.
> For bit forwarding devices:
> The time interval starting when the end of the first bit of the input frame reaches the input port and ending when the start of the first bit of the output frame is seen on the output port.

Note:

Before performing the Latency test, Throughput measurement must be completed.
If there are no Throughput test results, the Latency test cannot be performed.

Test Procedure

1. Send a test frame of the specified size to the DUT at the frame rate measured of the Throughput test results.
2. Send the test frame when half the specified time has elapsed and measure the Latency.The specified time is Duration in the following figure.
3. Calculate the average value after Step 1 and 2 are repeated only for the specified count.
4. Change the frame size of test frame and repeat step 1 to 3.
   Perform the test for the following frame sizes (bytes):
   64, 128, 256, 1024, 1280, 1518

The Add-on function has the setting of the frame size described in RFC2544 as the default value (Refer to Figure 2.3.2-1 "Settings Screen").

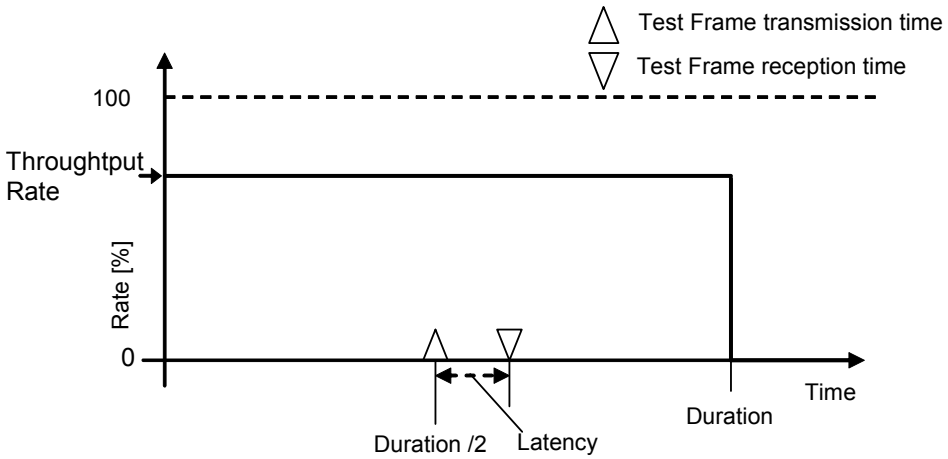


Figure 2.1.3-1 Latency Measurement Method

2.1.4 Back-to-Back Frame Test

The Back-to-Back Frame test measures the maximum burst size that the DUT can handle.

The burst size is the number of frames transmitted with the minimum IFG (Inter Frame Gap).

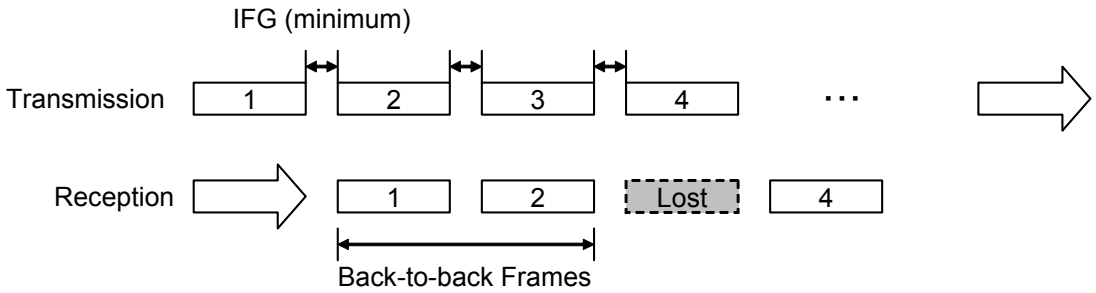


Figure 2.1.4-1 Concept of Back-to-Back Frames

Test Procedure

1. Transmit the test frame to the DUT with the minimum IFG.
2. Measure the number of received test frames until frame loss occurs.
3. Calculate the mean value as only the set count repeats step 1 to 2.
4. Change the frame size of test frame and repeat step 1 to 3.
   Perform the test for the following frame sizes (bytes).
   64, 128, 256, 1024, 1280, 1518

The Add-on function has the setting of the frame size described in RFC2544 as the default value (Refer to Figure 2.3.2-1 "Settings Screen").

Note:

The Back-to-Back Frame test assumes that Frame Loss occurs.
If there are no frame loss (sequence errors), the Tx frame count for the Trial Length setting indicates the test result.

2.2 Screen Operation

Touch [RFC 2544] at the top menu to display the following screens.

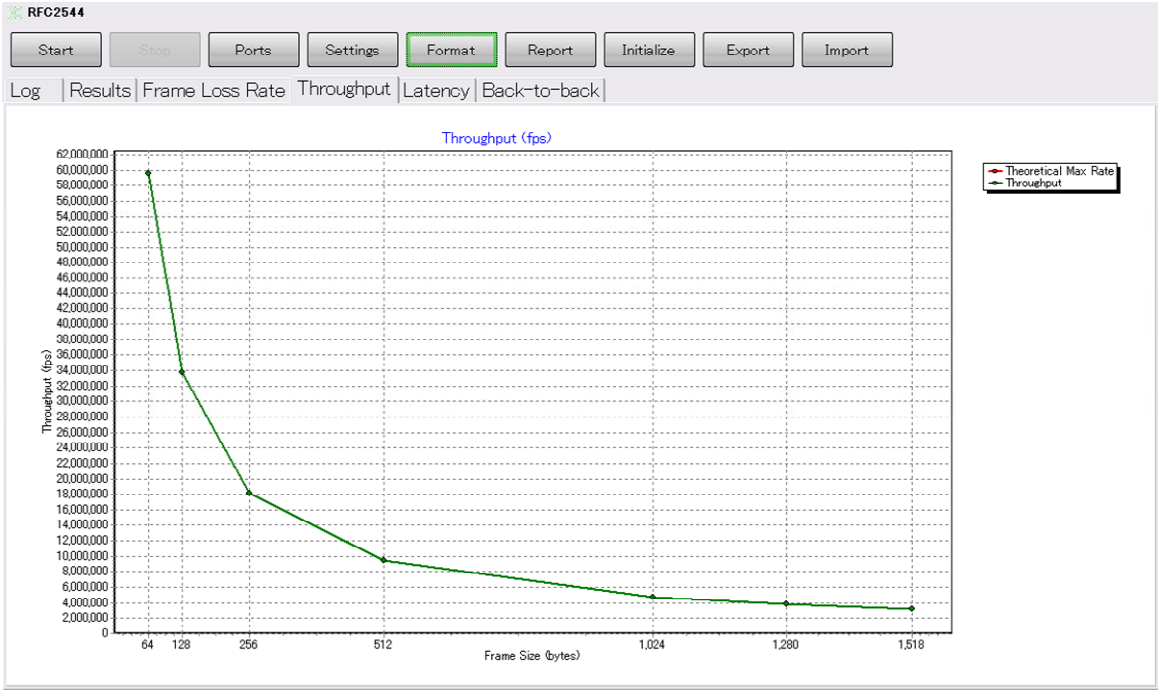


Figure 2.2-1 RFC2544 Test Screen

Table 2.2-1 Operation and Setting Button on the RFC2544 Test Screen

Name	Explanation
Start	Starts test
Stop	Stops test
Ports	Selects measurement port for test
Settings	Sets test method and parameters
Format	Sets display format of test result (Table or Graph)
Report	Saves test results
Initialize	Initializes setting details of Ports/Settings/Format
Export	Saves setting items of Setting and Format
Import	Reads setting items of Setting and Format from file

2.3 Setting Test Conditions

The RFC2544 application sets the following test conditions.

- Port assignment
- Test method

2.3.1 Port Assignment

The number of MD1260A units used for the test and the direction where the test frame is transmitted is set.
Refer to Section 7.2 Setting and Starting Multi Port in the MD1260A 40/100G Ethernet Analyzer Operation Manual for the setup when using multiple units and the setting method of the unit ID.

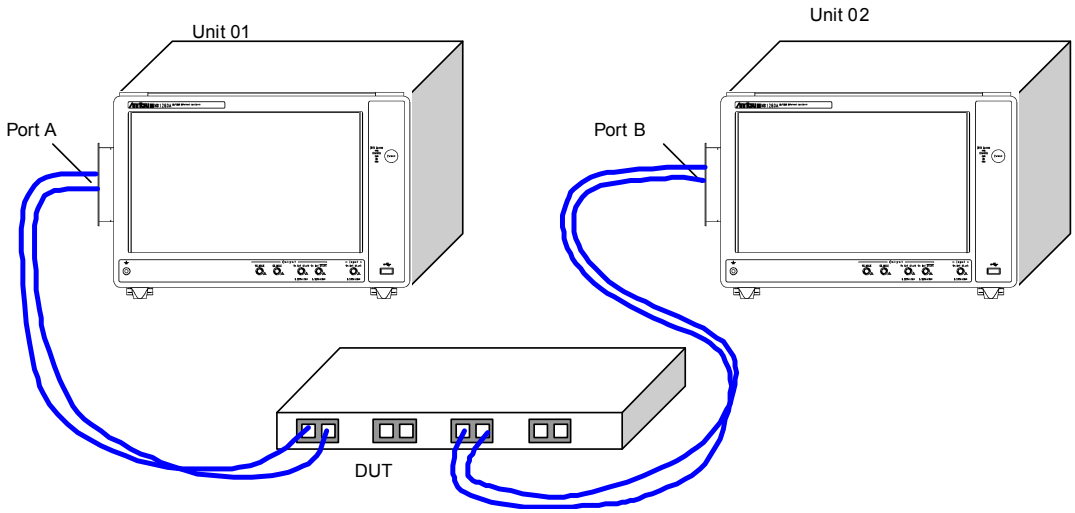


Figure 2.3.1-1 Setup for Multiple Units

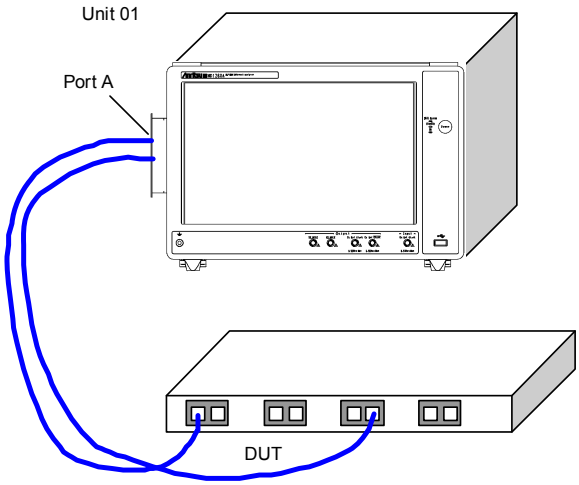


Figure 2.3.1-2 Setup for One Unit

The following address is assigned to Port A and Port B.

Table 2.3.1-1 Port Address

	MAC Address	IP Address
Port A	00-00-00-00-00-01	198.18.0.1
Port B	00-00-00-00-00-02	198.18.0.2

1. Touch [Ports].
2. Touch the Port A Unit ID button and set the unit number assigned to the Port A.
3. Touch the Port B Unit ID button and set the unit number assigned to the Port B.
   When one unit is used for the test, set the same unit number as the Port A Unit ID.
4. When two MD1260A units are used, Traffic Orientation can be selected. Touch the Traffic Orientation button and set the transmission direction of the test frame.
   [Bidirection]: Sends the test frame from both Port A and Port B
   [Port A to Port B]: Sends the test frame from the set MD1260A to Port A.
   [Port B to Port A]: Sends the test frame from the set MD1260A to Port B.
5. Touch [OK].

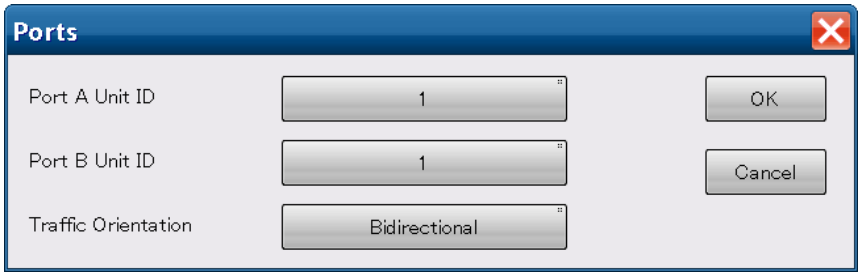


Figure 2.3.1-3 Ports Screen

2.3.2 Setting Test Method

Touching [Settings] opens the screen for setting the test method.

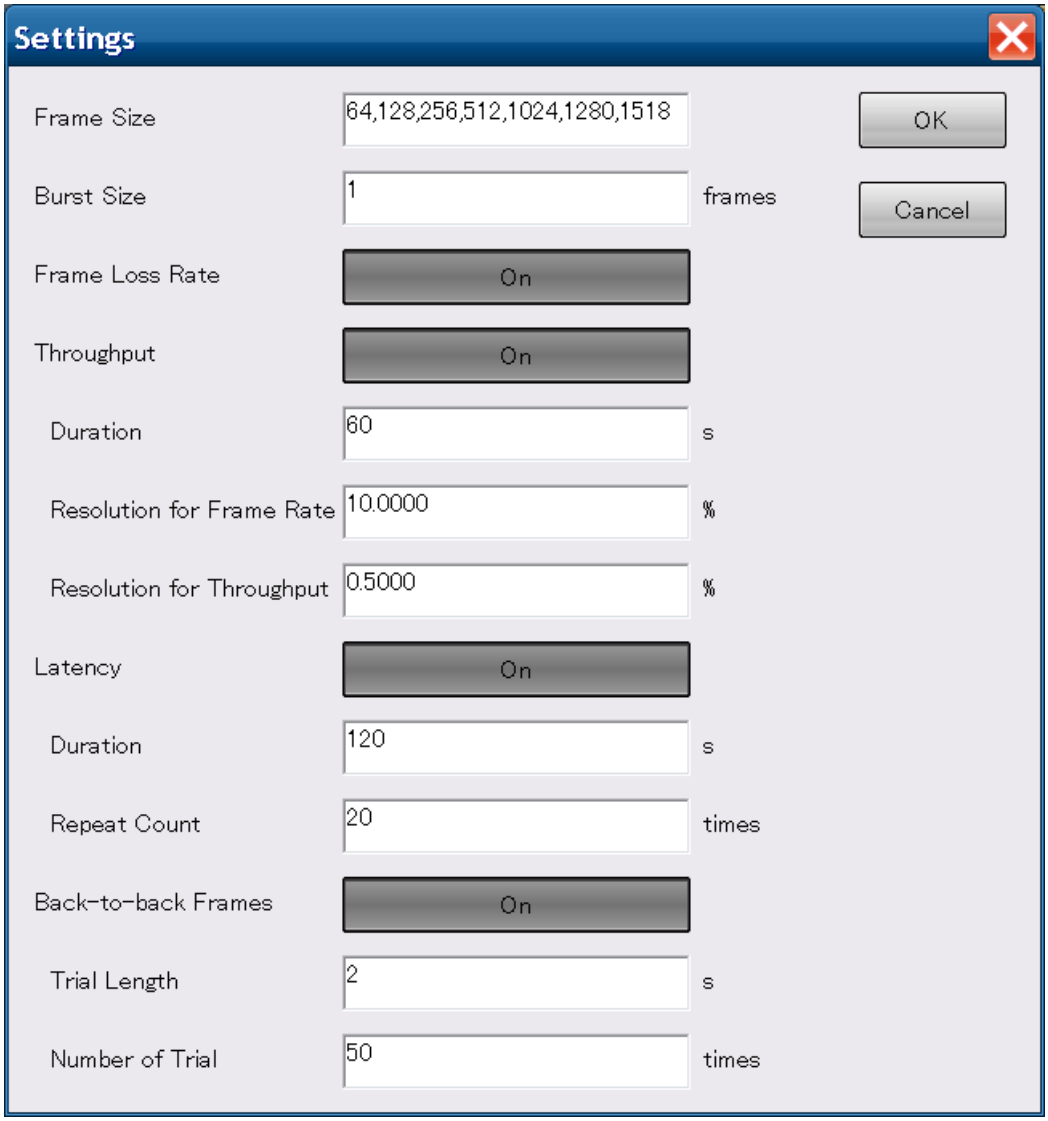


Figure 2.3.2-1 Settings Screen

Note:

The measurement result of Throughput is required to measure Latency.

If Latency is turned [On] when Throughput is [Off], an error message will be displayed.

Table 2.3.2-1 Settings Screen Items

Name	Explanation
Frame Size	Sets the test frame size (byte). Multiple sizes can be set with separation with commas.
Burst Size	Number of burst frames Sets test frame transmission to burst repeat If ≥2 is set, a burst is generated. The burst size sets the number (1 to 65535) of frames in one burst.
Frame Loss Rate	Off: Does not test Frame Loss The Frame Loss Rate tab is not displayed. On: Displays Frame Loss Rate tab and tests Frame Loss
Throughput	Selects the Throughput test Off: Does not test throughput The Throughput tab is not displayed. On: Displays Throughput tab and tests Throughput
Duration	Sets time for transmitting test frame at each trial of Throughput/Frame Loss Rate test (2 to 300 s) The RFC standard specifies 60 seconds or more.
Resolution for Throughput	Sets measurement resolution for Throughput test (0.0001% to 10%) If the measurement resolution can be coarse, the measurement time can be shortened by increasing the Resolution setting.
Resolution for Frame Loss	Sets measurement resolution (0.0001% to 10%) for Frame Loss Rate test
Latency	Selects the Latency test Off: Does not test Latency The Latency tab is not displayed. On: Displays Latency tab and tests Latency
Duration	Sets time for transmitting test frame at each trial of Latency test (2 to 300 s) The RFC standard specifies 120 seconds or more.
Repeat Count	Sets Latency measurement repeat count during trial The RFC standard specifies 20 or more time.
Back-to-Back Frames	Selects the Back-to-Back Frames test Off: Does not test Back-to-Back Frames The Back-to-Back Frames tab is not displayed. On: Displays Back-to-Back Frames tab and tests Back-to-Back frames
Trial Length	Sets test time for one trial (Maximum time for transmitting test frame) (2 to 300 s)
Number of Trial	Sets number of Back-to-Back Frames test per frame size (trial count, 1 to 50) The RFC standard specifies 50 or more times.

2.4 Starting/Stopping Test

Starting test

1. When testing using multiple units, touch [Sync] in the operation area and set the display to On.
2. Touching [Start] at the top tab starts the test.

Stopping test

Touch [Stop] at the top tab to stop the test.

Note:

1. When the test is performed, the settings of 40G Ethernet application or 100G Ethernet application are changed for the RFC2544 test.
2. Do not operate the screens other than RFC2544 while performing the test. If you do so, the RFC2544 test may not operate correctly.
3. Do not control the MD1260A using the remote command while performing the RFC2544 test.

2.5 Displaying Test Results

When the displayed buttons for the items below are set to On at the Settings screen, the test result tabs are displayed on the RFC2544 test screen.

Frame Loss Rate
Throughput
Latency
Back-to-Back Frames

Selecting the format (table or graph) at the Format screen displays the test results.

The test result display method can be selected from graph or table. Touching [Format] opens the screen to set the display method.

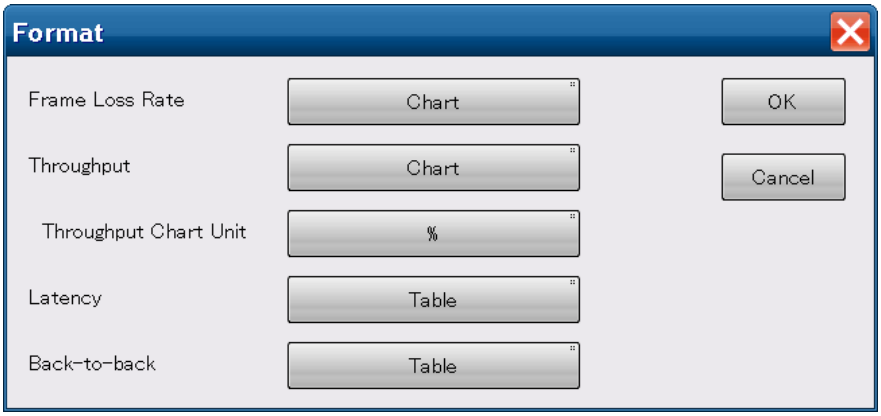


Figure 2.5-1 Format Screen

Table 2.5-1 Format Screen Setting Items

Name	Explanation
Frame Loss Rate	Sets display format for each test result Chart: Graph Table: Table
Throughput	
Latency	
Back-to-Back	
Throughput Chart Unit	Sets throughput display units

The RFC standard requires display of the test results as follows:

Throughput:	Graph
Latency:	Table
Frame Loss Rate:	Graph
Back-to-Back:	Table

2.6 File Operation and Settings Initialization

2.6.1 Saving to Files

Saving test results

Touching [Report] saves the test results to a test file.

Saving test conditions

Touching [Export] saves the settings of the setting and format screens to a file.
The settings of the Ports screen are not saved.

The test condition file is saved in the following path.
C:\ Documents and Settings\Administrator\My Documents
\Anritsu\MD1260A\UserData\RFC2544\Setting\config.lua

The test result file is saved in the following path.
C:\ Documents and Settings\Administrator\My Documents
\Anritsu\MD1260A\UserData\RFC2544\Result

The folder indicating date and time is created and the file name is saved in it.
The name of the folder that saved to 324 at 14:14:49, September 21, 2010 is:

20100921T141449

2.6.2 Loading Setting Conditions

1. Touch [Import].
2. The settings at the Setting and Format screens are loaded from the file.

2.6.3 Initialization

Touching [Initialize] initializes the setting details of Ports/Settings/Format.

2.7 Test Procedure

1. Connect the MD1260A and DUT.
2. Start the 40 GbE/100 GbE applications.
3. Confirm that Error/Alarm at the summary status area is not lit. Confirm that Link is green.
4. Touch [System Menu].
5. Touch [Add-on select].
6. Select [RFC2544] and touch [OK].
7. Touch [RFC2544] at the top menu.
8. When the slave is connected by the multiport function, touch [Ports] and set the port to be used and transmission direction of the test frame.
9. Touch [Settings] to set the test conditions.
10. Touch [Start] to start a test.
11. Touch the [Log] tab to display the test progress.
12. After test ends, check the results by touching the tab for the test items.
13. Touch [Format] and switch the test results display method to graph or table.
14. If the test results are saved to the file, touch [Report].

Chapter 3 CFP Analyzing Function

This chapter explains the screens and how to operate the CFP analyzing function.

Use of the CFP analysis function requires the MD1260A-031 CFP-MDIO option.

3.1 What is CFP Analyzing Function?

The CFP analyzing function reads the MDIO register, lists the contents per function and sets the MDIO register from a GUI.

The MDIO register value is interpreted according to the 5 CFP RESGISTER DESCRIPTION in the CFP MSA Management Interface Specification Version 1.4.

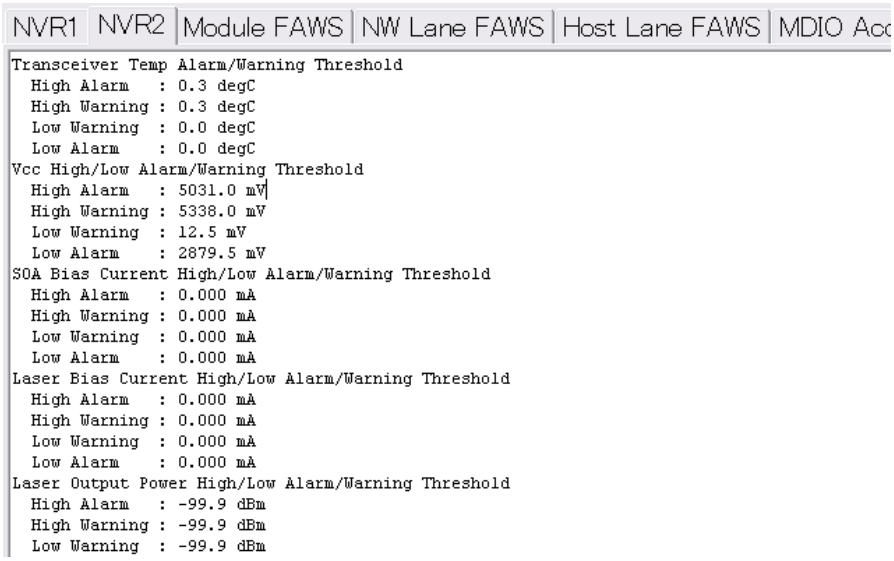
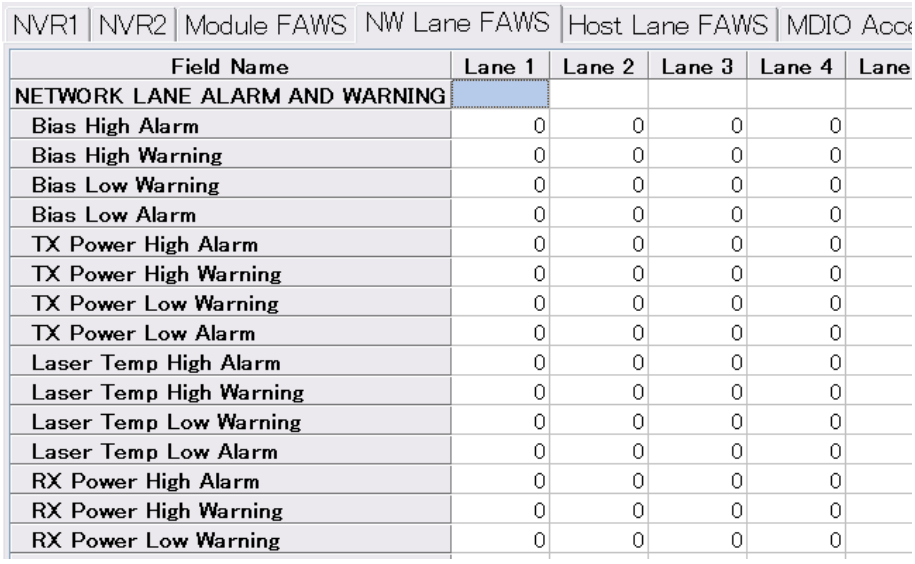


Figure 3.1-1 Display Example of MDIO Register (NVR2)



Field Name	Lane 1	Lane 2	Lane 3	Lane 4	Lane
NETWORK LANE ALARM AND WARNING					
Bias High Alarm	0	0	0	0	
Bias High Warning	0	0	0	0	
Bias Low Warning	0	0	0	0	
Bias Low Alarm	0	0	0	0	
TX Power High Alarm	0	0	0	0	
TX Power High Warning	0	0	0	0	
TX Power Low Warning	0	0	0	0	
TX Power Low Alarm	0	0	0	0	
Laser Temp High Alarm	0	0	0	0	
Laser Temp High Warning	0	0	0	0	
Laser Temp Low Warning	0	0	0	0	
Laser Temp Low Alarm	0	0	0	0	
RX Power High Alarm	0	0	0	0	
RX Power High Warning	0	0	0	0	
RX Power Low Warning	0	0	0	0	

Figure 3.1-2 Example of MDIO Register (Module FAWS) Display

The details of MDIO register are displayed in the CFP analysis function tab.

Table 3.1-1 Content of Displayed MDIO register

Tab Name	Displayed Information
NVR1	Basic information about output power, wavelength, power consumption, range of temperature, intended use, and manufacturer, etc.
NVR2	Evaluation threshold value for each alarm and warning
Module FAWS*	Detection of standard clock, abnormalities and alarms of module, such as loss of received optical power, and temperature, voltage, and bias current
NW Lane FAWS	Abnormalities and alarms of temperature and output power per network lane, and temperature, bias current, and value of received optical power
Host Lane FAWS	FIFO error status of each host lane and bit error rate

*: The Latch register data are displayed at the Module FAWS tab. The Latch register is cleared when the value is read from it.

For the following MDIO register, the value can be written from the screen.

Table 3.1-2 Contents of Reading and Writing Control Register

Name	Information
Hardware Pin	Accesses functions to hardware pin
Host Lane	Generates PRBS pattern, and selects pattern length, etc.
Network Lane Tx	Generates PRBS pattern, selects pattern length, selects bit rate, and sets standard clock divide rate, etc.
Network Lane Rx	Selects PRBS error count, loopback and pattern length and sets standard clock divide rate, etc.

Table 3.1-3 Contents of Reading and Writing FAWS Enable

Name	Information
General FAWS	Notification On/Off to Global Alarm of Module FAWS information in Table 3.1-1
Host Lane FAWS	Notification On/Off to Global Alarm of Host Lane FAWS in Table 3.1-1
Network Lane FAWS	Notification On/Off to Global Alarm of Host Lane FAWS information in Table 3.1-1

Moreover, to access any address of MDIO register, write and import the rule accessed to the MDIO register to the CSV file. For the writing method to the CSV file, refer to Section 3.5 File Operation.

As for the configuration of Global Alarm, refer to the 5 CFP RESGISTER DESCRIPTION in the CFP MSA Management Interface Specification Version 1.4.

3.2 Screen Operation

When touching [CFP MDIO Analysis] on the top menu, the following screen is displayed.

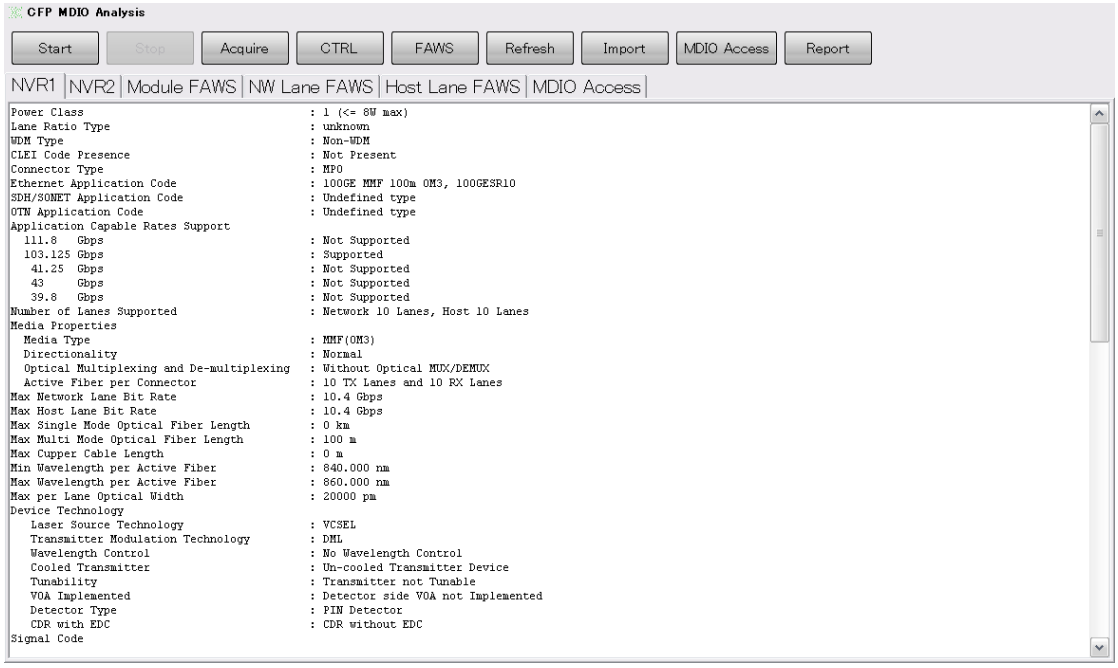


Figure 3.2-1 CFP Analysis Screen

Table 3.2-1 Operation/Setting Button on CFP Analysis Screen

Name	Explanation
Start	Starts updating MDIO information every second
Stop	Stops updating MDIO information every second
Acquire	Updates displays of Module FAWS, NW Lane FAWS, Host Lane FAWS tabs
CTRL	Sets Control Registers in Table 3.1-2
FAWS	Sets FAWS Enable Register in Table 3.1-2
Refresh	Updates displays of NVR1 and NVR2 tabs.
Import	Reads CSV format file with the rule accessed to the MDIO register. The read contents are displayed in the MDIO Access tab.
MDIO Access	Accesses to MDIO register according to the rule read from the CSV format file. The details accessed to the MDIO register are displayed in the MDIO Access tab by the table format.
Report	Saves measurement results

3.3 Starting/Stopping Analysis

Reading data

Touching [Acquire] in the operation and setting area reads the values of the [Module FAWS], [NW Lane FAWS], and [Host Lane FAWS] tabs from MDIO register and updates the displays.

Touching [Refresh] in the operation and setting area, read the values of [NVR1] and [NVR2] tabs from MDIO register and updates the displays. When CFP is replaced, use [Refresh].

When reading data every second

Touching [Start] in the operation and setting area reads the values of the [Module FAWS], [NW Lane FAWS], and [Host Lane FAWS] tabs from MDIO register every second and updates the screen displays.
Touching [Stop] stops reading every second.

The screen display refresh cycle is the 1-second measurement time plus the time for communications with the MDIO register.
The data communication time with MDIO register varies with the model of CFP.

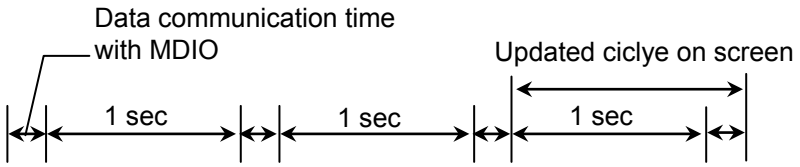


Figure 3.3-1 Updated Cycle

When reading data at 1-second intervals, a time difference is caused between the time when reading the Rx bit-count register and the error-bit register. This time difference will cause an error in the BER measurement result.
To obtain the correct BER measurement results, perform the measurement referring to the following procedures.

When performing BER measurement at Host lanes

The following settings assume that PRBS is received at CAUI lane by CFP.

1. Touch [CTRL].
2. Touch the [Host Lane] tab.
3. Set Tx PRBS Checker to [OFF].
4. Touch [Apply].
5. Set Tx PRBS Checker from [PRBS7] to [PRBS31].
6. Touch [OK].

7. Touch [Start].
8. Touch [Stop] when the required measurement time passes.
9. Touch [CTRL].
10. Touch the [Host Lane] tab.
11. Set Tx PRBS Checker to [OFF].
12. Touch [OK].
13. Touch [Acquire].

The procedures 7 and 8 can be omitted. When the procedures 7 and 8 are omitted, the screen display is not updated until touching [Acquire].

When performing BER measurement at Network lanes

1. Touch [CTRL].
2. Touch the [Network Lane(Tx)] tab.
3. Set Tx PRBS Generator from [PRBS7] to [PRBS31].
4. Touch the [Network Lane(Rx)] tab.
5. Set RX PRBS Check to [OFF].
6. Touch [Apply].
7. Set Rx PRBS Checker from [PRBS7] to [PRBS31].
8. Touch [OK].
9. Touch [Start].
10. Touch [Stop] when the required measurement time passes.
11. Touch [CTRL].
12. Touch the [Network Lane(Rx)] tab.
13. Set RX PRBS Check to [OFF].
14. Touch [OK].
15. Touch [Acquire].

The procedures 9 and 10 can be omitted. When the procedures 9 and 10 are omitted, the screen display is not updated until touching [Acquire].

3.4 Setting Register

3.4.1 Setting control register

1. Touch [CTRL] in the operation and setting area to open the screen for setting the Control register.
2. Touch the tab for setting register.
3. Touch the text box of the register and set the value.
4. When touching [OK] or [Apply], the register values are written.

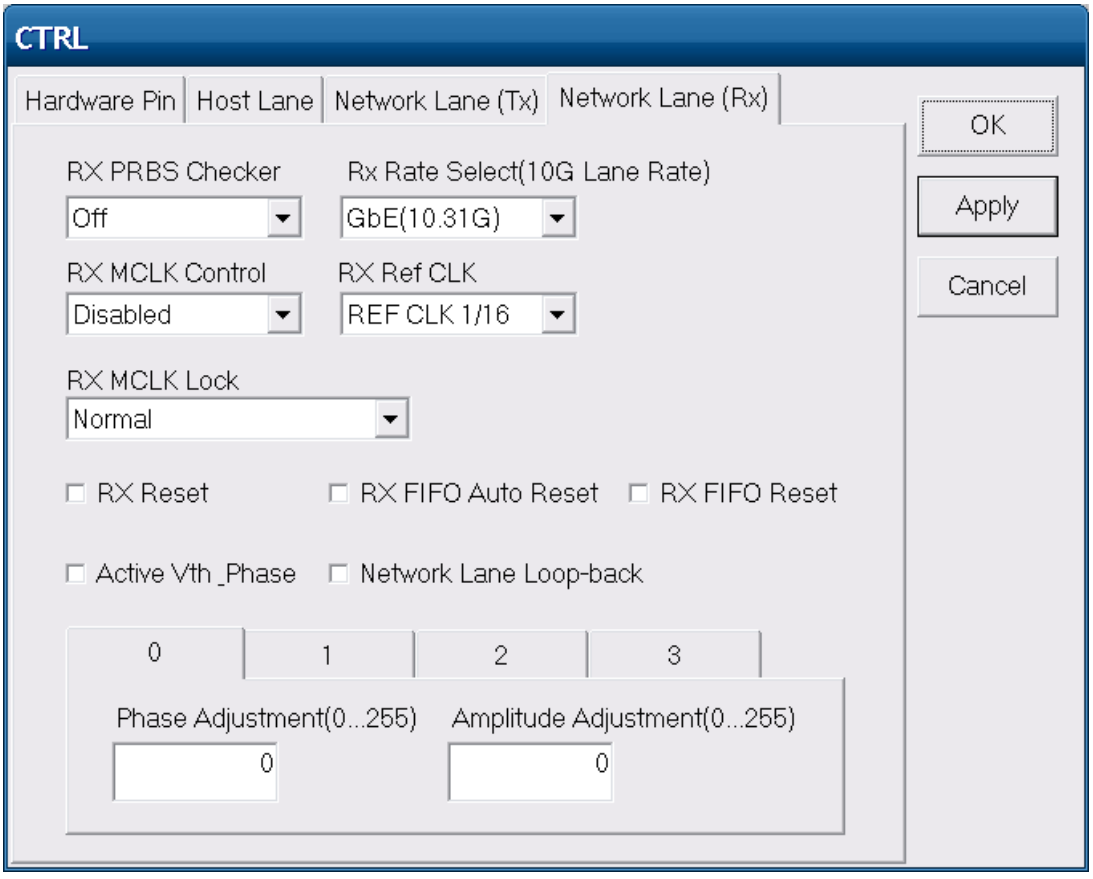


Figure 3.4.1-1 CTRL Screen

3.4.2 Setting FAWS Enable register

1. Touch [FAWS] in the operation and setting area to open the screen for setting the FAWS Enable register.
2. Touch the tab for setting register.
3. Touch the text box of the register and set the value. For data including alarms and statuses, set to 1. For data without alarms or statuses, set to 0.
4. When touching [OK] or [Apply], the register values are written.

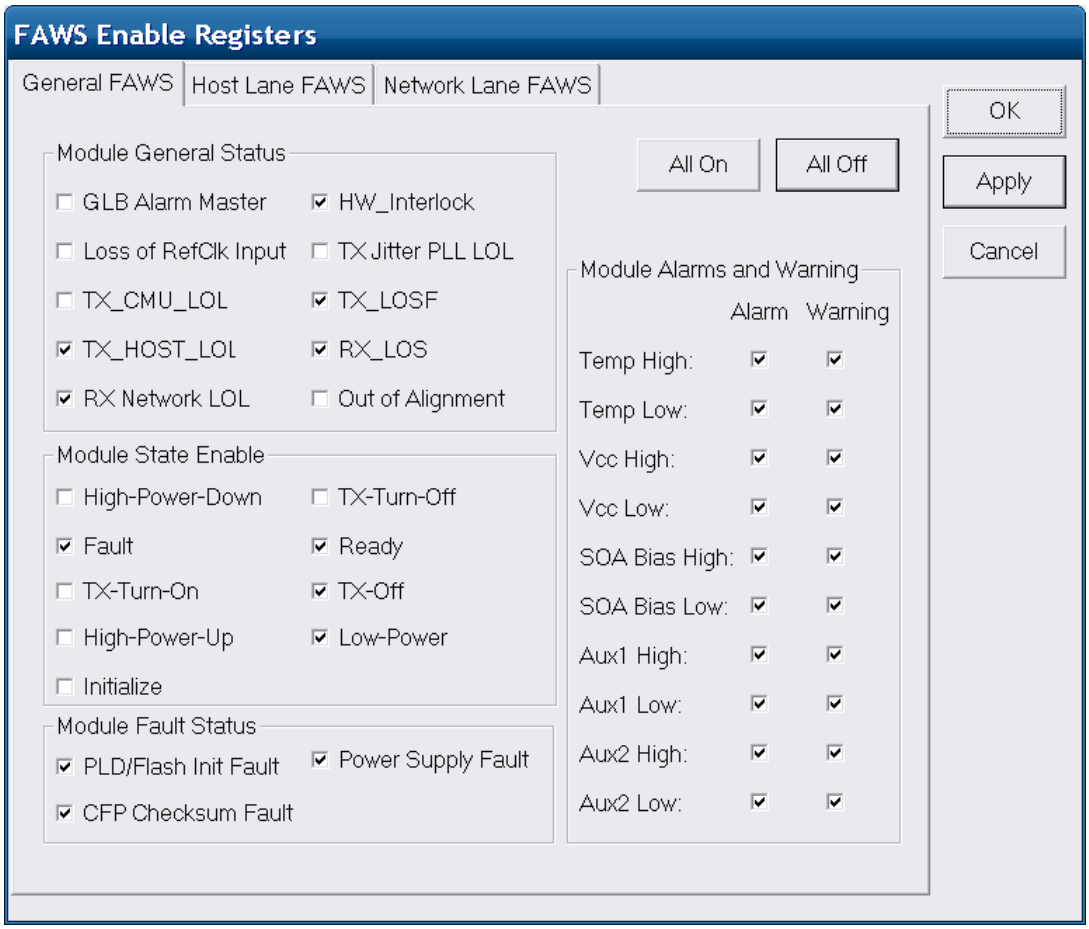


Figure 3.4.2-1 FAWS Enable Registers Screen

3.5 Creating MDIO Access Rule File

3.5.1 Specifications of MDIO Access Rule

The MDIO Access Rule is saved with the file extension csv by the CSV format.
For the MDIO access rule, the following items in Table 3.5.1-1 are described in the data file per address.
Up to 1000 digits can be written.

Table 3.5.1-1 Description item of MDIO Access Rule

Item	Format	Explanation
Address of MDIO register	4-digit hexadecimal number	Range from 0000 to FFFF
Read/Write	Characters	R: Reading W: Writing
Writing data *	4-digit hexadecimal number	When Read/Write is W, set the range from 0000 to FFFF.
Writing mask *	4-digit hexadecimal number	When Read/Write is W, set the range from 0000 to FFFF. Set the mask bit to 0 and write bit to 1.

*: If Read/Write is R, it is not used even if described.

Write data is bit shifted up to the bit where the write mask data becomes 1.
The AND value of the bit shifted write data and each write mask bit is written to MDIO register.
Write mask 0 bits do not change the value of the MDIO register.

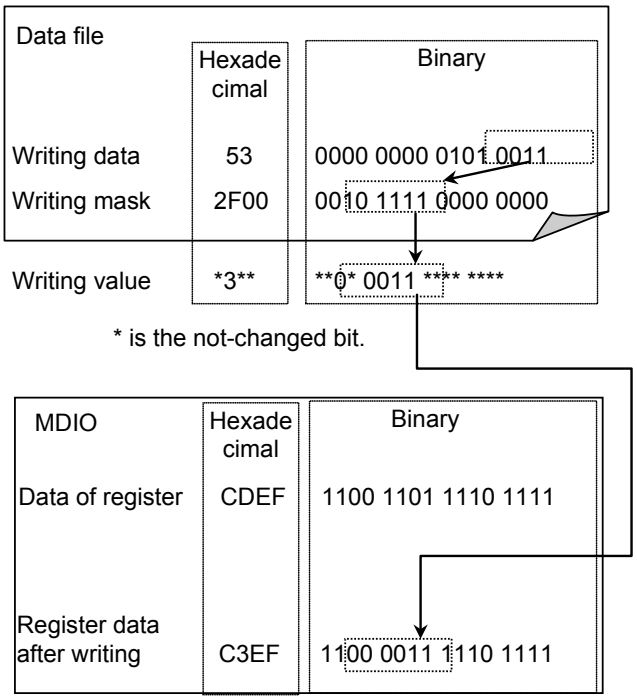


Figure 3.5.1-1 Relationship between Write Data, Write Mask and Register Data

Example of use

The MX MCLK of the Network Lane TX Control register is set to 1/8 of network lane rate. The register specifications are as shown in the following table.

Table 3.5.1-1 Specifications of Network Lane TX Control Register

Address	Bit	Name	Specification
A011	7 to 5	TX MCLK Control	000b: Disabled, 001b: Reserved, 010b: 1/8 of network lane rate, 011b: Reserved, 100b: 1/64 of network lane rate, 101b: 1/64 of host lane rate, 110b: 1/16 of network lane rate, 111b: 1/16 of host lane rate.

010b is set to the bit 7 to 5 of Address A011 according to the register specifications. The information in the MDIO access rule is described as shown below.

```
A011,W,2,00E0
```

The following figure shows the example of the MDIO access rule.

```
A005,W,1,0001
A006,W,1,0001
A007,W,1,0001
A010,W,7,01C0
A018,R
A019,R
A01A,R
A01B,R
```

Write 1 to bit 0 of address 0xA005 to 0xA007

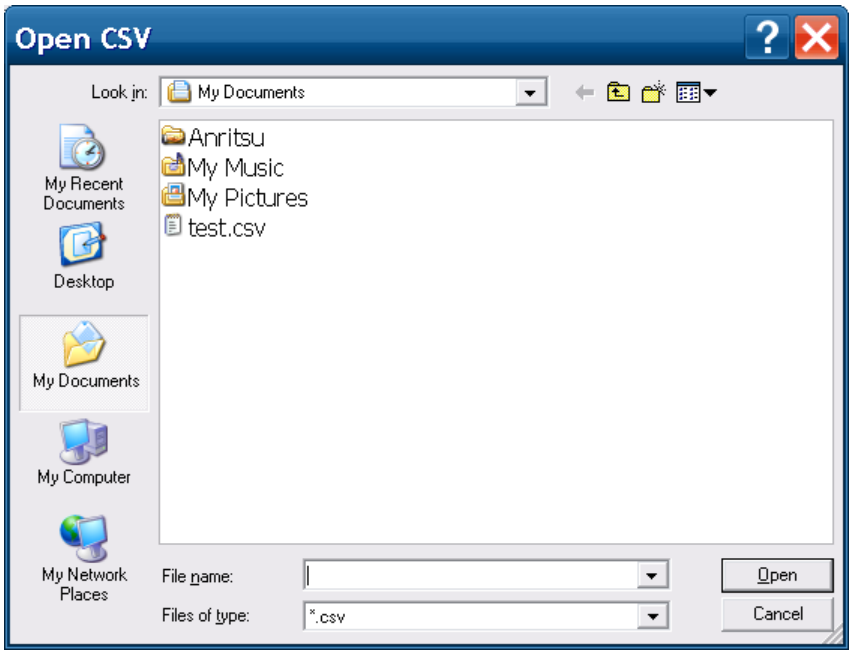
Write 7 to bits 6 to 8 of address 0xA010

Read addresses 0xA018 to 0xA01B

Figure 3.5.1-2 Example of MDIO Access Rule

3.5.2 Reading MDIO Access Rule Data File

1. Touch [Import]. The file selection screen is displayed.

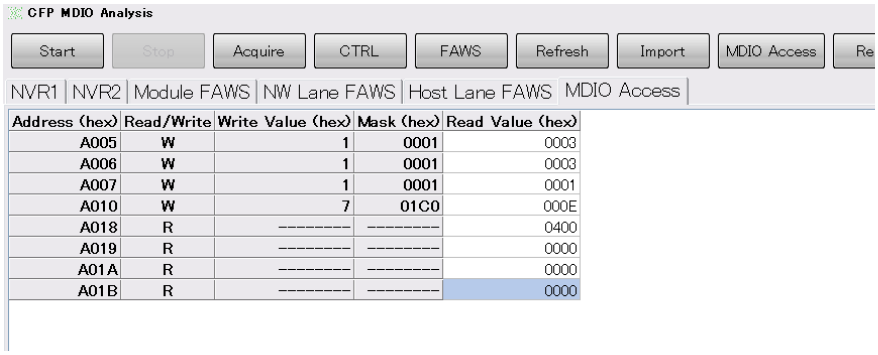


2. Select the file and touch [OK].
3. The MDIO access rule is displayed in the [MDIO Access] tab.

3.5.3 Accessing to MDIO

When touching [MDIO Access] in the operation and setting area, the data displayed on the [MDIO Access] tab is accessed.

The Read value (hex) of the register after writing is shown in the following table where the Read/Write address is W.



Address (hex)	Read/Write	Write Value (hex)	Mask (hex)	Read Value (hex)
A005	W	1	0001	0003
A006	W	1	0001	0003
A007	W	1	0001	0001
A010	W	7	01C0	000E
A018	R	--------	--------	0400
A019	R	--------	--------	0000
A01A	R	--------	--------	0000
A01B	R	--------	--------	0000

Figure 3.5.3-1 Display Example of [MDIO Access] Tab

3.6 Saving Measurement Results

Saving test results

Touching the [Report] in the operation and setting area saves the MDIO analysis results to a test file.

- The contents displayed on the NVR1 and NVR2 are saved with character strings directly.
- The contents displayed on the Module FAWS, NW Lane FAWS, Host Lane FAWS, and MDIO Access are output and delimited using tabs.

The test result file is saved in the following folder.
C:\ Documents and Settings\Administrator\My Documents \Anritsu\MD1260A\UserData\MDIOAnalysis\Result

A file is created with the date and time as the name. The test results are saved in this file. For example, the name of the file saved at 10:20:30 on February 1, 2011 is:

20110201T102030.txt

```
==================== NVR1 ====================
Power Class                                    : 1 (<= 8W max)
Lane Ratio Type                                : Network Lane:Host Lane = n:n (Parallel type),
WDM Type                                       : CWDM
CLEI Code Presence                             : Not Present
Connector Type                                 : SC
Ethernet Application Code                      : 40GE SMF 10km, 40GE-LR4
SDH/SONET Application Code                     : Undefined type
OTN Application Code                           : Undefined type
Application Capable Rates Support
  111.8    Gbps                                : Not Supported
  103.125 Gbps                                 : Not Supported
   41.25   Gbps                                : Supported
   43       Gbps                               : Not Supported
   39.8    Gbps                                : Not Supported
Number of Lanes Supported                      : Network 4 Lanes, Host 4 Lanes
Media Properties
  Media Type                                   : SMF
  Directionality                               : Normal
  Optical Multiplexing and De-multiplexing     : With Optical MUX/DEMUX
  Active Fiber per Connector                   : 4 TX Lanes and 4 RX Lanes
Max Network Lane Bit Rate                      : 10.4 Gbps
Max Host Lane Bit Rate                         : 10.4 Gbps
Max Single Mode Optical Fiber Length           : 10 km
Max Multi Mode Optical Fiber Length            : 0 m
    CDR with EDC                               : CDR without EDC
Signal Code
    Modulation                                 : NRZ
    Signal coding                              : Non-PSK
Max Total Optical Output Power per connector : 6700 uW
Max Total Input per Network Lane               : 1600 uW
Max Power Consumption                          : 8000 mW(Normal), 1000 mW(Low Power Mode)
Operating Case Temp Range                      : 0 degC ...70 degC
```

Figure 3.6-1 Saving Data Example of NVR1 Tab

```
==================== Module FAWS ====================
Field Name          Value
MODULE STATE
   High-Power-down State   0
   TX-Turn-off State       0
   Fault State       0
   Ready State       1
   TX-Turn-on State        0
   TX-Off State      0
   High-Power-up State     0
   Low-Power State         0
   Initialize State  0
MODULE GENERAL STATUS
   HW_Interlock      0
   Loss of REFCLK Input    0
   TX_JITTER_PLL_LOL       0
   TX_CMU_LOL  0
   TX_LOSF           0
   TX_HOST_LOL 0
   RX_LOS            0
   RX_NETWORK_LOL          0
   Out of Alignment        0
MODULE FAULT STATUS
   PLD or Flash Initialization Fault     0
   Power Supply Fault      0
   CFP Checksum Fault      0
```

Figure 3.6-2 Saving Data Example of Module FAWS

```
==================== NW Lane FAWS ====================
Field Name          Lane 1    Lane 2    Lane 3    Lane 4
NETWORK LANE ALARM AND WARNING
   Bias High Alarm 0         0         0         0
   Bias High Warning         0         0         0         0
   Bias Low Warning          0         0         0         0
   Bias Low Alarm  0         0         0         0
   TX Power High Alarm       0         0         0         0
   TX Power High Warning     0         0         0         0
   TX Power Low Warning      0         0         0         0
   TX Power Low Alarm        0         0         0         0
   Laser Temp High Alarm     0         0         0         0
   Laser Temp High Warning             0         0         0         0
   Laser Temp Low Warning    0         0         0         0
   Laser Temp Low Alarm      0         0         0         0
   RX Power High Alarm       0         0         0         0
   RX Power High Warning     0         0         0         0
   RX Power Low Warning      1         1         1         1
   RX Power Low Alarm        1         1         1         1
NETWORK LANE FAULT AND STATUS
   Lane TEC Fault  0         0         0         0
   Lane Wavelength Unlocked Fault      0         0         0         0
   Lane APD Power Supply Fault         0         0         0         0
   Lane TX_LOSF    0         0         0         0
   Lane TX_LOL     0         0         0         0
   Lane RX_LOS     1         1         1         1
   Lane RX_LOL     1         1         1         1
   Lane RX FIFO Status       0         0         0         0
```

Figure 3.6-3 Saving Data Example of NW Lane FAWS

3.7 Analysis Procedure

1. Connect CFP.
2. Start the 40GbE or 100GbE application.
3. Touch [System Menu].
4. Touch [Add-on select].
5. Select [CFP MDIO Analysis] and touch [OK].
6. Touch [CFP MDIO Analysis] on the top menu.
7. When touching [Start] or [Acquire], the analysis results are displayed.
8. When saving the test result screen to the file, touch [Report] in.

When changing CFP, touch [Refresh].

Chapter 4 Lambda Grouping Measurement

This chapter explains the screens for the lambda grouping measurement and operation methods.
The Lambda grouping measurement is an Add-on function that can be executed from the 100GbE, 100GbE No Frame, 40GbE, and 40GbE No Frame applications.

4.1 Outline of Lambda Grouping Measurement

10GBASE-LR4/ER4 uses optical signals with four different wavelengths in the communications path. Twenty PCS lanes are assigned to four paths, each of five lanes.

At lambda grouping measurement, the PCS lanes are measured in groups of five. In the same way as the CFP internal PCS lanes and path mapping, the BER and PCS layer error can be displayed per wavelength by assigning groups of lanes.

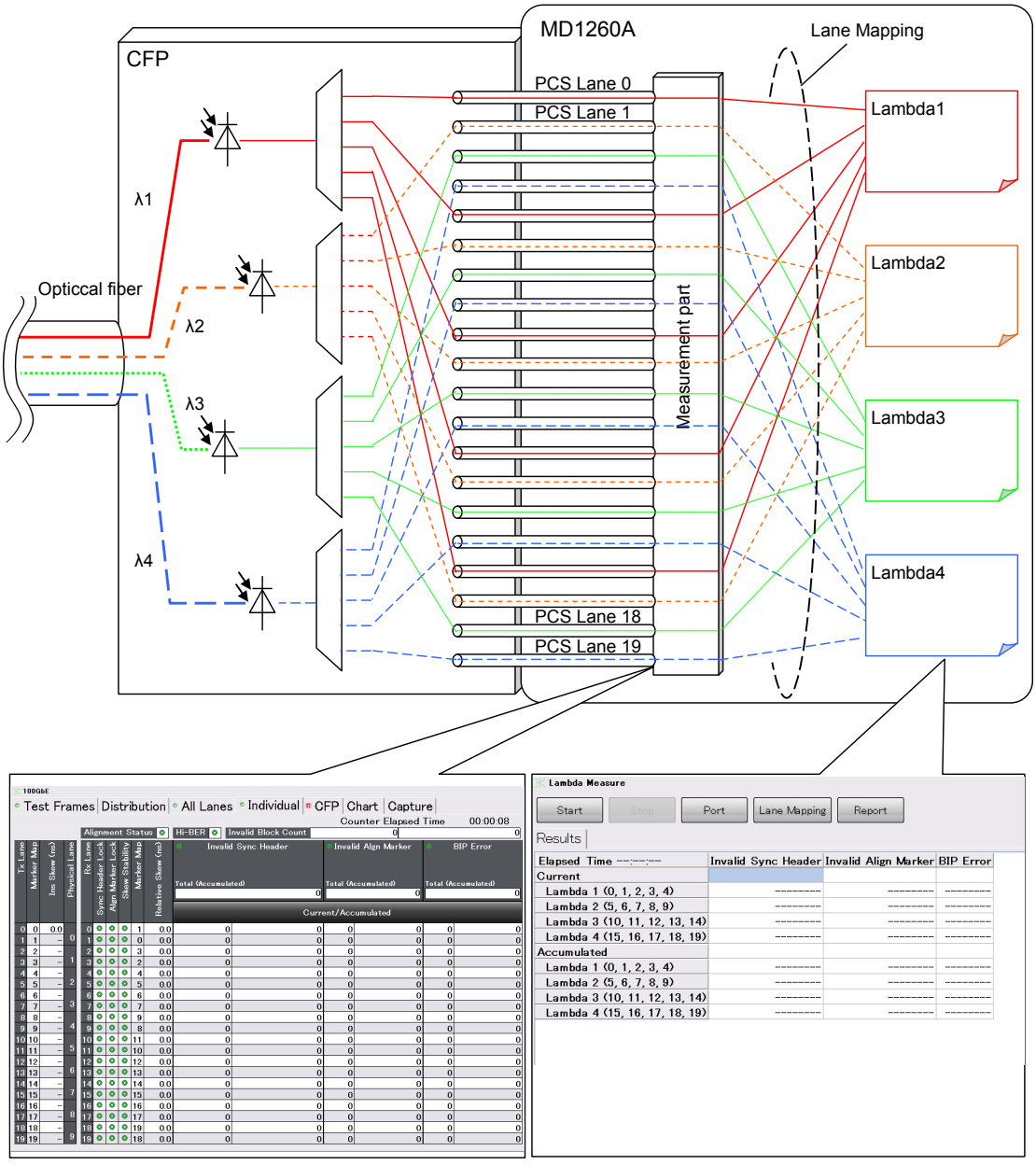
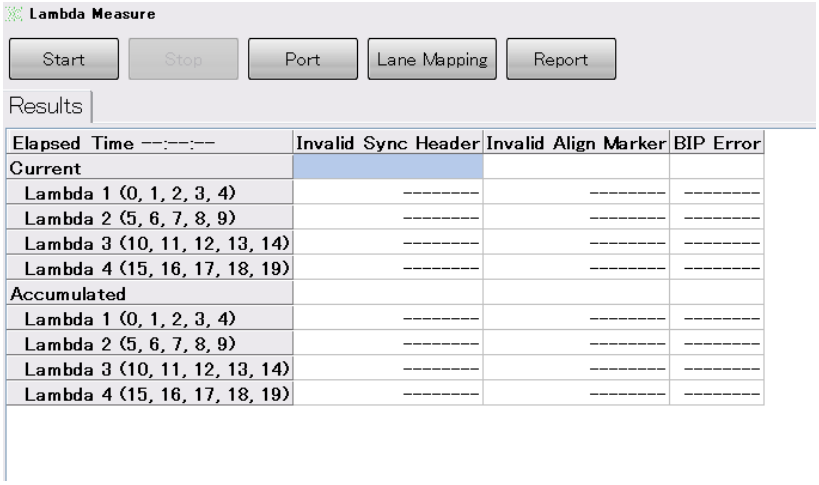


Figure 4.1-1 Measurement per Lambda Group

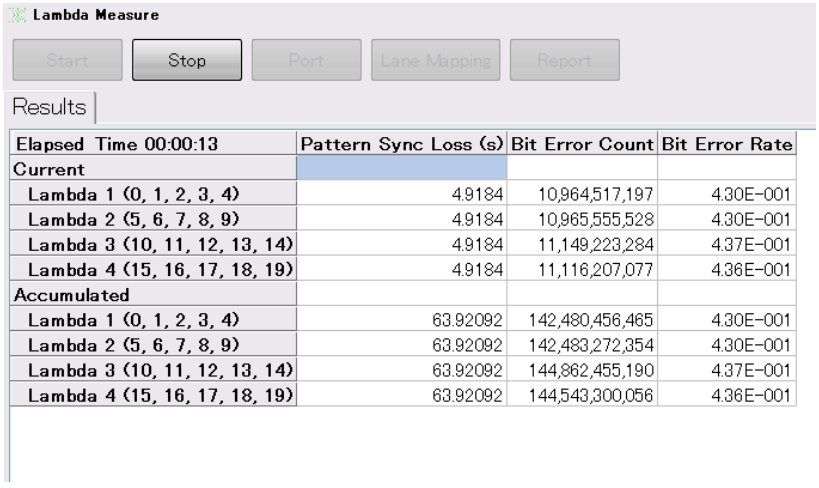
When performing measurement using the 100GbE application or OTU4 application, the Invalid Sync Header, Invalid Align Marker, and BIP Error are displayed for each lambda group.



Elapsed Time --:--:--	Invalid Sync Header	Invalid Align Marker	BIP Error
Current			
Lambda 1 (0, 1, 2, 3, 4)	--------	--------	--------
Lambda 2 (5, 6, 7, 8, 9)	--------	--------	--------
Lambda 3 (10, 11, 12, 13, 14)	--------	--------	--------
Lambda 4 (15, 16, 17, 18, 19)	--------	--------	--------
Accumulated			
Lambda 1 (0, 1, 2, 3, 4)	--------	--------	--------
Lambda 2 (5, 6, 7, 8, 9)	--------	--------	--------
Lambda 3 (10, 11, 12, 13, 14)	--------	--------	--------
Lambda 4 (15, 16, 17, 18, 19)	--------	--------	--------

Figure 4.1-2 100GbE Application Measurement

When performing measurement using the 100GbE No Frame application or OTU4 application, the Pattern Sync Loss, Bit Error Count, and Bit Error Rate are displayed per lambda group.



Elapsed Time 00:00:13	Pattern Sync Loss (s)	Bit Error Count	Bit Error Rate
Current			
Lambda 1 (0, 1, 2, 3, 4)	4.9184	10,964,517,197	4.30E-001
Lambda 2 (5, 6, 7, 8, 9)	4.9184	10,965,555,528	4.30E-001
Lambda 3 (10, 11, 12, 13, 14)	4.9184	11,149,223,284	4.37E-001
Lambda 4 (15, 16, 17, 18, 19)	4.9184	11,116,207,077	4.36E-001
Accumulated			
Lambda 1 (0, 1, 2, 3, 4)	63.92092	142,480,456,465	4.30E-001
Lambda 2 (5, 6, 7, 8, 9)	63.92092	142,483,272,354	4.30E-001
Lambda 3 (10, 11, 12, 13, 14)	63.92092	144,862,455,190	4.37E-001
Lambda 4 (15, 16, 17, 18, 19)	63.92092	144,543,300,056	4.36E-001

Figure 4.1-3 100GbE No Frame Application Measurement

The time from the start of measurement is displayed in Elapsed Time.

4.2 Screen Operation

When touching [Lambda Measure] on the top menu, the following screen is displayed.

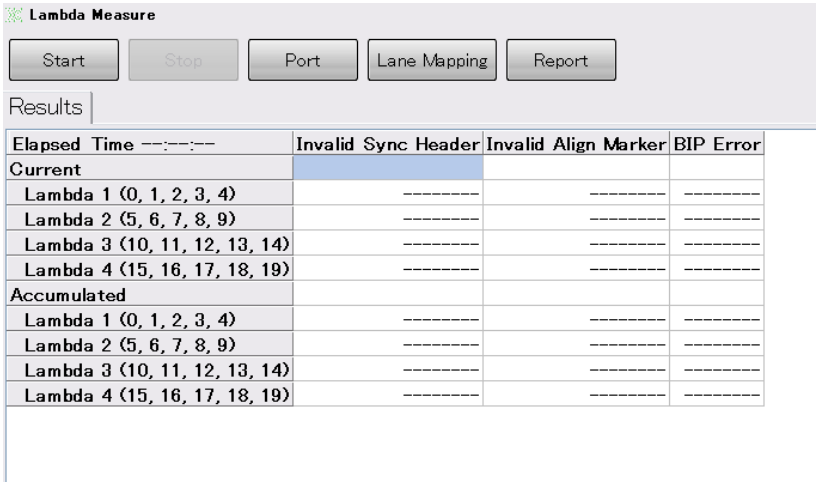


Figure 4.2-1 Lambda Measure Screen (100GbE)

Table 4.2-1 Operation/Setting Button on Lambda Measure Screen

Name	Explanation
Start	Starts measurement per lambda group
Stop	Stops measurement per lambda group
Ports	Selects CFP measurement port
Current	Displays measurement value every 1 second
Lane Mapping	Displays screen with PCS lanes assigned to lambda group
Report	Saves measurement results

4.3 Setting Lambda Grouping Measurement

The following measurement conditions are set for the lambda grouping measurement.

- Port assignment
- PCS lane assignment

4.3.1 Port Assignment

The number of the MD1260A unit performing lambda grouping measurement is set.
Refer to Section 7.2 Setting and Starting Multi Port in the MD1260A 40/100G Ethernet Analyzer Operation Manual for the connection method when using multiple MD1260A units and the unit ID settings.

1. Touching [Ports] displays the Unit ID selection screen.
2. Touch the unit number.
3. Touch [OK].

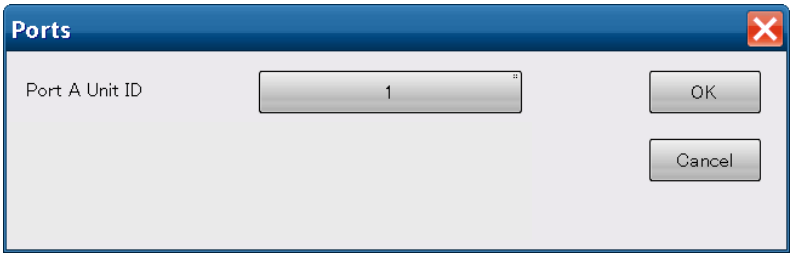


Figure 4.3.1-1 Ports Screen

4.3.2 PCS Lane Assignment

The measurement results for the grouped PCS lanes are assigned in four groups each of five lanes.

1. Touching [Lane Mapping] displays the Lane Mapping screen.
2. Click the lane number.
   The multiple numbers of lanes can be selected.
3. Clicking [>>] of Lambda1 to Lambda4 [>>] assigns lanes to each of those lambda groups.
4. To remove lane assignments, click [<<] for the lane number displayed at the lambda group.
5. Touch [OK].

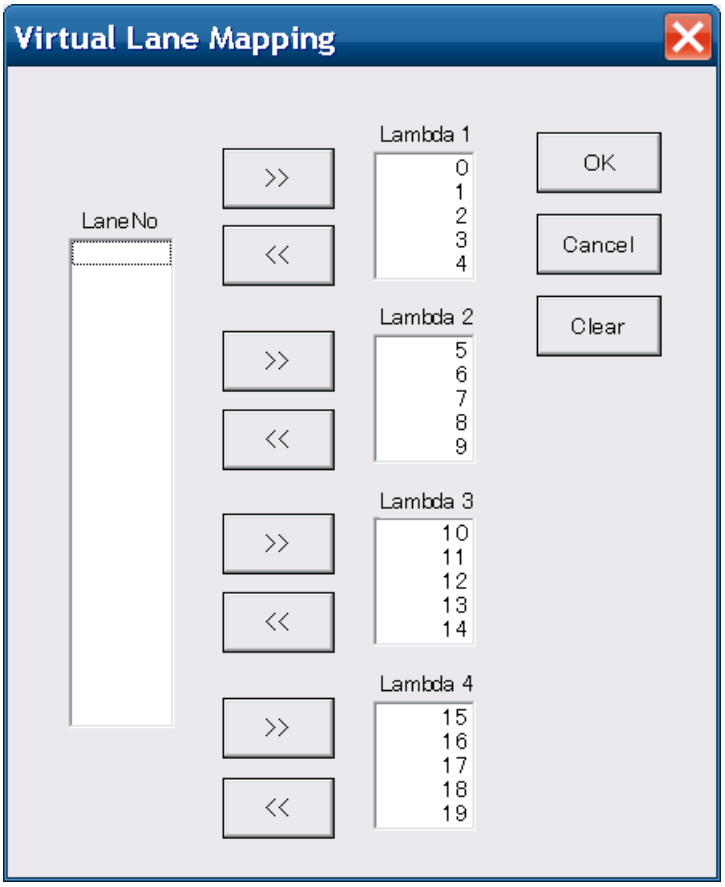


Figure 4.3.2-1 Lane Mapping Screen

Touching [Clear] moves all lane numbers to the left list box.

4.4 Starting/Stopping Measurement

Starting measurement

Touching [Start] in the operation starts counting ports specified Section 4.3.1. Port Assignment.

Stopping measurement

Touching [Stop] in the operation and setting area stops the counter.

Note:

Do not attempt to perform control using remote commands while executing lambda grouping measurement.

4.5 Saving Measurement Results

Saving test results

When touching the [Report] in the operation, the table details displayed in the test result screen are output to a text file with tab-separated.

The test result file is saved in the following folder.
C:\ Documents and Settings\Administrator\My Documents \Anritsu\MD1260A\UserData\Lambda\Result

A file is created with the date and time as the name. The test results are saved in this file. For example, the name of the file saved at 10:20:30 on February 1, 2011 is:

20110201T102030

Copying test results

When using a connected mouse, right-clicking the Result tab display copies the table results to the clipboard.

4.6 Measurement Procedures

1. Connect the MD1260A and DUT.
2. Start the 100GbE, 100GbE No Frame, OTU4 or OTU4 No Frame application.
3. For 100GbE, check that Link in the summary status area lights up green.
4. Touch [System Menu].
5. Touch [Add-on select].
6. Select [Lambda Measure] and touch [OK].
7. Touch [Lambda Measure] from the top menu.
8. When controlling the multiple MD1260A units under the multi-port function, touch [Ports] and set the port to be analyzed.
9. Touch [Lane Mapping] and assign the PCS lane to the lambda group.
10. Touch [Start] and start the measurement.
11. When saving the measurement result screen to the file, touch [Report].

Chapter 5 Service Disruption Time Measurement

This chapter explains the service disruption time measurement screen and operation method. The service disruption time measurement is a part of the Add-on function. This function can be executed by the 40GbE or 100GbE application.

5.1 What is Service Disruption Time Measurement?

The service disruption time is the interruption time of the communication caused by Ethernet frame loss during communications.

The service disruption time is calculated using the following formula.

$$T_D = \frac{Frame\_Loss}{Frame\_Rate}$$

$$Frame\_Loss = Tx\_Frame - Rx\_Frame$$

$$Frame\_Rate = \frac{Tx\_Frame}{Tx\_Time}$$

T_D: Service disruption time
Tx_Frame: Number of transmission frames
Rx_Frame: Number of reception frames
Tx_Time: Frame transmission time

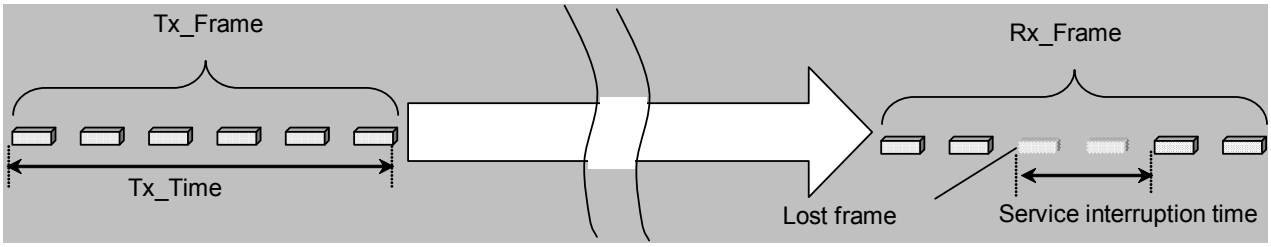


Figure 5.1-1 Outline of Service Disruption Time

The Add-on function measures the number of sent and received frames using test frames for 40 and 100 GbE applications.
Start the service disruption test after the Ethernet frame header and data size, and flow ID allocation are set in advance at the 40 and 100 GbE application Stream window.

MD1260A 40/100G Ethernet Analyzer Operation Manual
4.2.4 Editing two or more streams

Note:

Set a sufficiently long interval for sending frames matching the time from frame sending to receiving (delay).
If the frame sending interval is shorter than the delay, sometimes received frames may not be counted (Figure5.1-3) at one update cycle. In this case, the number of measured received frames will be less than the number of sent frames according to the delay difference. This difference is the measurement error at service disruption.

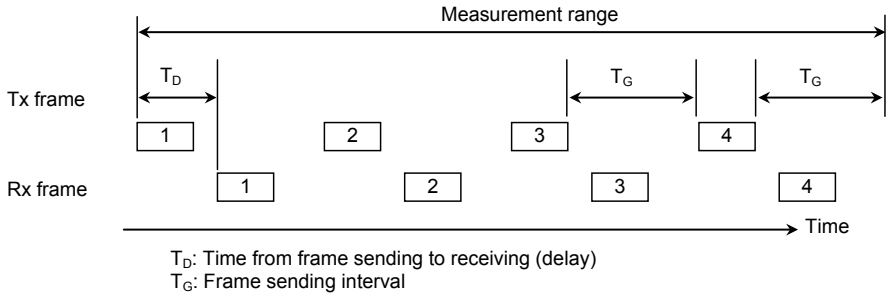


Figure 5.1-2 Measurement Time Range when Frame Sending Interval Larger than Delay

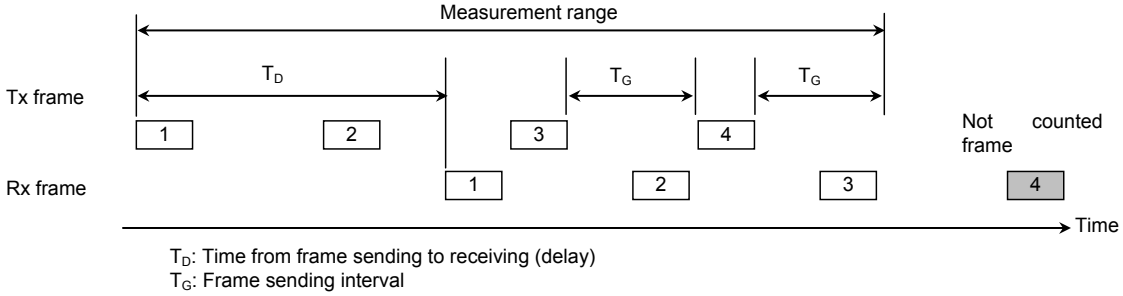


Figure 5.1-3 Measurement Time Range when Frame Sending Interval Smaller than Delay

5.2 Screen Operation

When touching [Service Disruption] on the top menu, the following screen is displayed.

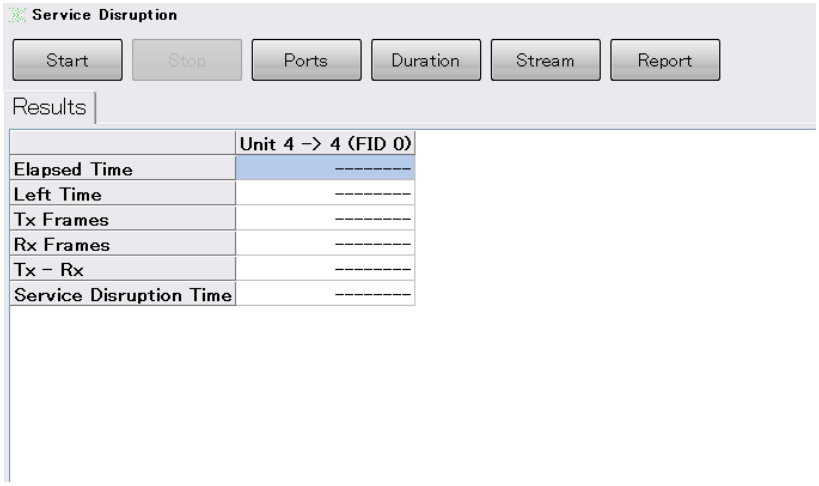


Figure 5.2-1 Service Disruption Screen

Table 5.2-1 Operation/Setting Button on Service Disruption Screen

Name	Explanation
Start	Starts measurement
Stop	Stops measurement
Ports	Sets port to be used for sending/receiving screen and sending direction
Duration	Sets stream sending time
Stream	Sets Flow ID of test frame used at measurement of service disruption time
Report	Saves measurement results

5.3 Setting Measurement Conditions

The following measurement conditions are set for the service disruption time.

- Port assignment
- Measurement time
- Flow ID

Measurement of the service disruption time assumes that test frames have been set in the sent stream.
The 40GbE and 100GbE application test frame measurement identifies the received test frame flow using the Flow ID. At measurement of the service disruption time, the Flow ID is set and only one flow can be measured (multiple flows cannot be measured simultaneously).

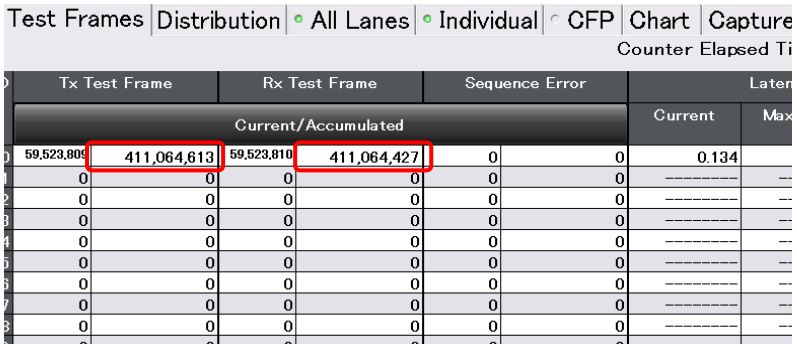


Figure 5.3-1 Frame Count used to Calculate Service Disruption Time (when Flow ID is 0)

When Stream Configuration is set to [Off], the Flow ID stream configuration (linkage from Stream1 to Stream16) is created using the [Stream] button of the 40GbE and 100GbE application.

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4.3.1 Test frame

In this case, streams without a set test frame cannot be used for measurement of the service disruption time.
When Stream Configuration is set to [On], the Flow ID stream configuration can be set from the Stream screen of Service Disruption.

5.3.1 Port assignment

The number of the MD1260A unit, stream transmission direction and stream configuration performing measurement is set.
Refer to Section 7.2 Setting and Starting Multi Port in the MD1260A 40/100G Ethernet Analyzer Operation Manual for the connection method when using multiple MD1260A units and the unit ID settings.

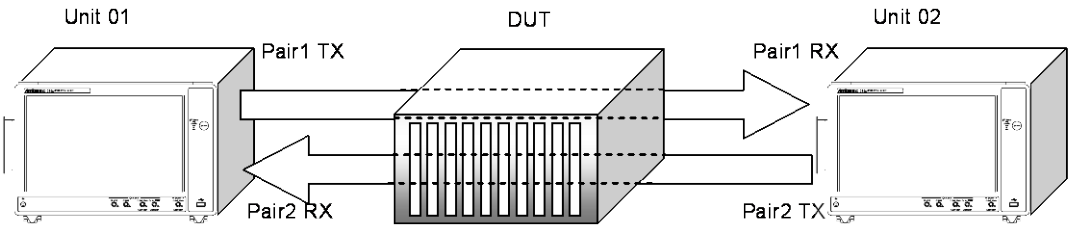

Figure 5.3.1-1 Example of Port Assignment when Using Multiple MD1260A Units

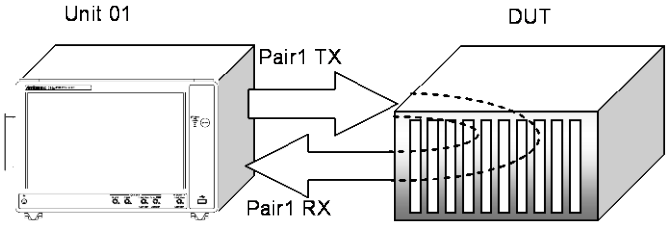

Figure 5.3.1-2 Example of Port Assignment when Using One MD1260A Unit

1. Touch [Ports] in the operation and setting area.
2. Touch the Stream Configuration button to set the stream configuration method.
3. Touching the Pair1 TX Unit ID button displays the Unit ID selection screen.
   Set the number of the unit for the MD1260A sending the Pair1 stream.
4. Touching the Pair1 RX Unit ID button sets the number of the unit for the MD1260A receiving the pair stream.
5. When there is an MD1260A connected using the multiport function, touch the Pair2 TX Unit ID and Pair2 RX Unit ID buttons to set the number of the units for the MD1260A.
6. Touch [OK].

Figure 5.3.1-3 Ports Screen

5.3.2 Setting Measurement Time

1. Touch [Duration].
2. Touch the Duration button to set the stream configuration.
   Off: Stops stream transmission when time passes
   On: Sends stream until touching [Stop].
3. When setting to [Off] at 2., touch the text box of hours, minutes, and seconds to set the transmission time.
   The setting range is from 0:0:10 to 24:00:00.
4. Touch [OK].

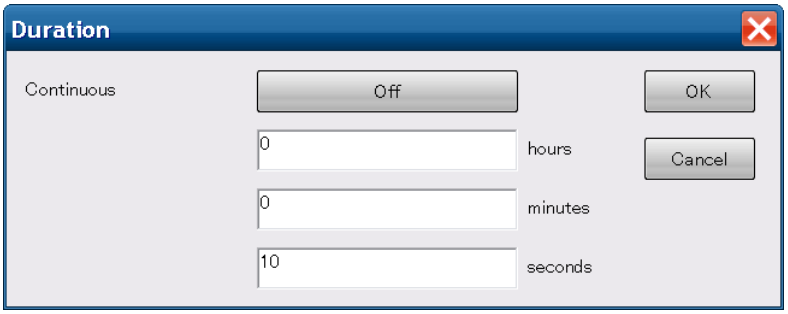

Figure 5.3.2-1 Duration Screen

5.3.3 Flow ID

1. Touch [Stream].
2. Touch the Flow ID button and specify the flow ID measuring the service disruption time.
3. Likewise, specify the flow ID when sending Pair2 Stream.

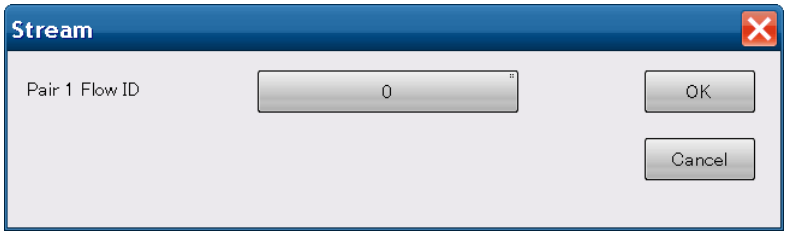

Figure 5.3.3-1 Pair1 Stream Screen (when Stream Configuration is Off)

Figure 5.3.3-2 Pair1 Stream Screen (when Stream Configuration is On)

4. When setting Stream Configuration to [On] at Section 5.3.1 Port assignment, the stream configuration at the Flow ID can be set. Touching the [Stream] button displays the stream configuration setting screen.

Figure 5.3.3-3 Screen Configuration Setting Screen

5. Touching the stream button to set the flow ID displays it in dark gray. Touch [OK].

5.4 Starting/Stopping Measurement

Starting measurement

Touching [Start] in the operation and setting area starts the measurement.

Stopping measurement

When Continuous of [Duration] is set to [On], touching [Stop] in the operation and setting area stops the measurement.
When Continuous of [Duration] is set to [Off], measurement stops automatically after the set time has elapsed.

Note:

1. Do not operate the screen other than Service Disruption during the measurement. The service disruption time measurement is not performed correctly.

2. Do not attempt to perform control using remote commands while executing service disruption time measurement.

5.5 Saving Measurement Results

Saving test results

When touching [Report] in the operation, the table details displayed in the test result screen are output to a text file with tab-separated.

The measurement result file is saved in the following folder.
C:\ Documents and Settings\Administrator\My Documents\Anritsu \MD1260A\UserData\ServiceDisruption\Result

A file is created with the date and time as the name. The test results are saved in this file. For example, the name of the file saved at 15:35:00 on February 1, 2011 is:

20110201T153500.txt

5.6 Measurement Procedures

1. Connect the MD1260A and DUT.
2. Start the 40 GbE/100 GbE applications.
3. Confirm that Error/Alarm at the summary status area is not lit.
   Confirm that Link is green.
4. Touch [Stream].
5. Touch [Control/Header].
6. Set Frame Size to [Fix].
7. Set Gap Size to [Fix].
8. Set Gap Size to a larger value than Delay (at least twice as long).
9. Touch the Counter [▶] button.
10. Touch the Stream [▶] button.
11. Touch the [Test Frames] Tab
    Check that the measurement value in Rx Test Frame is displayed.
12. Touch [System Menu].
13. Touch [Add-on select].
14. Select [Service Disruption] and touch [OK].
15. Touch [Service Disruption] at the top menu.
16. Touch [Ports] to set the transmission direction of the port and test frame to be used.
17. Touch [Duration] to set the measurement time and stream configuration.
18. Touch [Stream] to set the Flow ID and stream ID.
19. Touch [Start] to start measurement.
20. When saving the measurement results in the file, touch [Report].

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Table A.1-1 Ports

Item	Initial Setting Values
Port A	*
Port B	
Traffic Orientation	Port A to Port B

*: This number is assigned to the operating unit.

Table A.1-2 Settings

Item		Initial Setting Values	Unit
Frame Size		64,128,256,512,1024, 1280,1518	
Burst Size		1	frames
Frame Loss Rate		On	
Throughput		On	
	Duration	60	s
	Resolution for Frame Rate	10.0000	%
	Resolution for Throughput	0.5000	%
Latency		On	
	Duration	120	s
	Repeat Count	20	times
Back-to-back Frames		On	
	Trial Length	2	s
	Number of Trial	50	times

Table A.1-3 Format

Item	Initial Setting Values
Throughput	Chart
Throughput Unit	%
Latency	Table
Frame Loss Rate	Chart
Back-to-back Frames	Table

A.2 Lambda Grouping Measure

Table A.2-1 Ports

Item	Initial Setting Values
Port	*

*: This number is assigned to the operating unit.

Table A.2-2 Lane Mapping

Item	Initial Setting Values
Lambda1	Lane 0, Lane 1, Lane 2, Lane 3, Lane 4
Lambda2	Lane 5, Lane 6, Lane 7, Lane 8, Lane 9
Lambda3	Lane 10, Lane 11, Lane 12, Lane 13, Lane 14
Lambda4	Lane 15, Lane 16, Lane 17, Lane 18, Lane 19

A.3 Service Disruption

Table A.2-1 Ports

Item	Initial Setting Values
Stream Configuration	On
Pair1 TX Unit ID	*
Pair1 RX Unit ID	*
Pair2 TX Unit ID	*
Pair2 RX Unit ID	*

*: This number is assigned to the operating unit.

Table A.2-2 Duration

Item	Initial Setting Values
Continuous	Off
hours	0
minutes	0
seconds	10

Table A.2-3 Pair1 Stream

Item	Initial Setting Values
Flow ID	0
Stream ID	*

*: When starting the Service Disruption function on Add-on, the Stream settings are realized.

Table A.2-4 Pair2 Stream

Item	Initial Setting Values
Flow ID	0
Stream ID	*

*: When starting the Service Disruption function on Add-on, the Stream settings are realized.

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