MZ1225A
Adapter for QSFP+
Operation Manual

Second Edition

For safety and warning information, please read this manual before attempting to use 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

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

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

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

Safety Symbols Used on Equipment and in Manual

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

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

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

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

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

♲   🗑   These indicate that the marked part should be recycled.

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21   June   2011 (First Edition)
10   August   2011 (Second Edition)

For Safety

WARNING ⚠

ALWAYS refer to the operation manual when working near locations at which the alert mark shown on the left is attached. If the advice in the operation manual is not followed there is a risk of personal injury or reduced equipment performance. The alert mark shown on the left may also be used with other marks and descriptions to indicate other dangers.

CAUTION ⚠

Use in a residential environment

This instrument is designed for an industrial environment.

In a residential environment this instrument may cause radio interference in which case the user may be required to take adequate measures.

Equipment Certificate

Anritsu Corporation certifies that this equipment was tested before shipment using calibrated measuring instruments with direct traceability to public testing organizations recognized by national research laboratories, including the National Institute of Advanced Industrial Science and Technology, and the National Institute of Information and Communications Technology, and was found to meet the published specifications.

Anritsu Warranty

Anritsu Corporation will repair this equipment free-of-charge if a malfunction occurs within one year after shipment due to a manufacturing fault. However, software fixes will be made in accordance with the separate Software End-User License Agreement. Moreover, Anritsu Corporation will deem this warranty void when:

- The fault is outside the scope of the warranty conditions described in the operation manual.
- The fault is due to mishandling, misuse, or unauthorized modification or repair of the equipment by the customer.
- The fault is due to severe usage clearly exceeding normal usage.
- The fault is due to improper or insufficient maintenance by the customer.
- The fault is due to natural disaster including fire, flooding, earthquake, etc.
- The fault is due to use of non-specified peripheral equipment, peripheral parts, consumables, etc.
- The fault is due to use of a non-specified power supply or in a non-specified installation location.

In addition, this warranty is valid only for the original equipment purchaser. It is not transferable if the equipment is resold.
Anritsu Corporation shall assume no liability for injury or financial loss of the customer due to the use of or a failure to be able to use this equipment.

Anritsu Corporation Contact

In the event that 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 CD version.

Crossed-out Wheeled Bin Symbol

Equipment marked with the Crossed-out Wheeled Bin Symbol complies with council directive 2002/96/EC (the "WEEE Directive") in European Union.

For Products placed on the EU market after August 13, 2005, please contact your local Anritsu representative at the end of the product's useful life to arrange disposal in accordance with your initial contract and the local law.

Notes On Export Management

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

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

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

Notice

The following actions are strictly prohibited for all of the software installed in this product or otherwise provided by Anritsu:

1. This product should be installed indoors. The product performances are not guaranteed under the following conditions; extreme vibrations, dust, direct sunlight, activated gas, variable atmospheric pressure, condensation and static electricity.

2. This product should be used for private industries. It should not be used for medical care, military, aerospace.

3. The support and service of this product is available only in Japan. In addition, the reception time for repairs and inquiries is 8:30 am to 5:00 pm, Monday through Friday, excluding Saturday, Sunday, national holidays, and holidays specified by Anritsu.

CE Conformity Marking

Anritsu affixes the CE Conformity marking on the following product(s) in accordance with the Council Directive 93/68/EEC to indicate that they conform to the EMC and LVD directive of the European Union (EU).

CE marking

$C\,E$

1. Product Model

Model: MZ1225A Adapter for QSFP+

2. Applied Directive and Standards

When the MZ1225A Adapter for QSFP+ is installed in the MD1260A, the applied directive and standards of this unit conform to those of the MD1260A 40/100G Ethernet Analyzer.

PS: About main frame
Please contact Anritsu for the latest information on MD1260A that MZ1225A can be used with.

C-tick Conformity Marking

Anritsu affixes the C-tick marking on the following product(s) in accordance with the regulation to indicate that they conform to the EMC framework of Australia/New Zealand.

C-tick marking

⊘N274

1. Product Model

Model: MZ1225A Adapter for QSFP+

2. Applied Directive and Standards

When the MZ1225A Adapter for QSFP+ is installed in the MD1260A, the applied directive and standards of this unit conform to those of the MD1260A main frame.

PS: About main frame
Please contact Anritsu for the latest information on MD1260A that MZ1225A can be used with.

About This Manual

The operation manual for the MZ1225A Adapter for QSFP+ covers the usage precautions, product outline and installation method.

1 Product Outline
This section explains the purpose of this product usage.

2 Before Use
This section explains the items and each part name confirmed when purchasing the product.

3 How to Use
This section explains how to use this product.

4 Storage
This section explains the procedures and precautions when storing this product.

5 Transportation/ Disposal
This section explains the precautions when transporting and disposing this product.
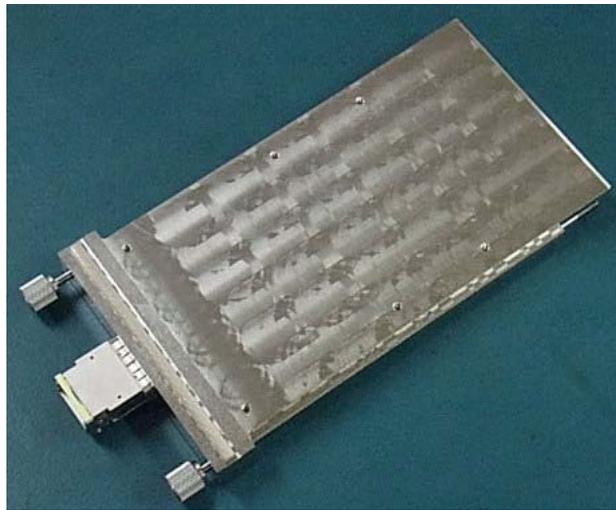
Table of Contents

1   Outline

MZ1225A Adapter for QSFP+ is an adapter to convert the QSFP+ module to the CFP module form.
The MZ1225A is used being inserted to the measurement port (CFP module installation part) of the MD1260A 40/100G Ethernet analyzer (hereinafter referred to as MD1260A).

QSFP+: Quad Small Form factor Pluggable plus Module

CFP: 100Gigabit Form factor Pluggable Module

Figure 1-1   Appearance of MZ1225A Adapter for QSFP+

QSFP+ connector	MZ1225A	CFP connector

QSFP+

Optical connector

Tx1 — Tx1
Tx2
Tx2 — Tx3
Tx4
Tx3 — Tx5
Tx6
Tx4 — Tx7
Tx8
Tx9
Tx10

Rx1 — Rx1
Rx2
Rx2 — Rx3
Rx4
Rx3 — Rx5
Rx6
Rx4 — Rx7
Rx8
Rx9
Rx10

Register

SCL — MDIO Bus
SDA — Address Bus

Logic circuit

SCL: 2-wire serial interface clock
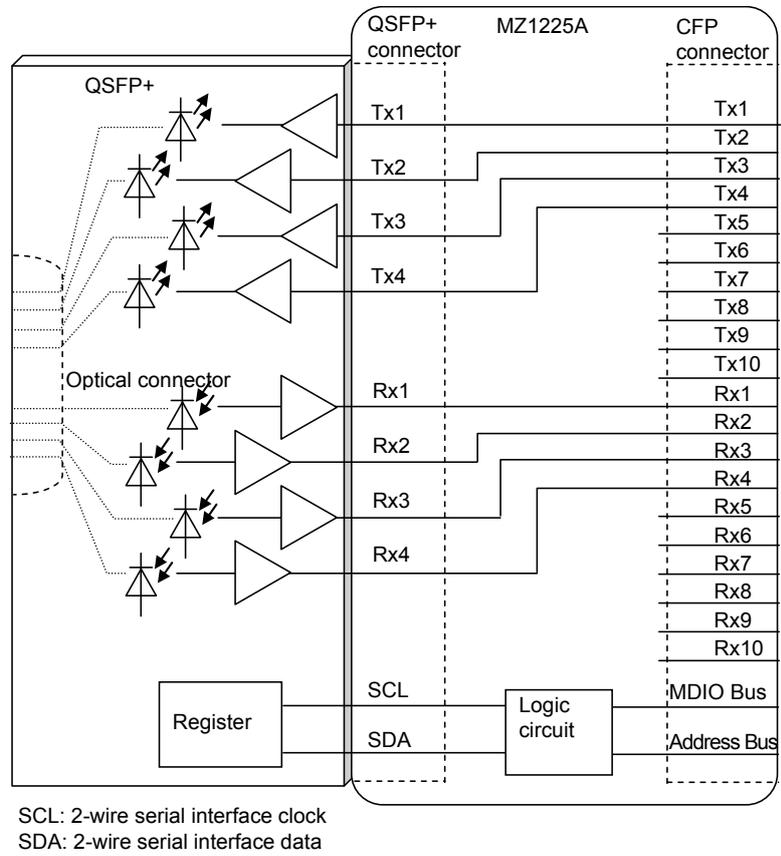SDA: 2-wire serial interface data

Figure 1-2   Block Diagram of the MZ1225A Adapter for QSFP+

2 Before Use

2.1 Standard Configuration

At unpacking, check that all items are included. See the attached file including the standard configuration table (see Table 2.1-1). Contact your Anritsu Service and Sales Office or agent if any parts are missing or damaged.

Table 2.1-1   Standard Configuration

| Item	Product Name	Quantity	Remarks
Main Unit	MZ1225A Adapter for QSFP+	1	
Accessory	Z1442A MD1260A Software/Manual CD-ROM	1	CD-ROM Includes Adapter for QSFP+ Operation Manual

2.2 Applicable Parts

Table 2.2-1   Applicable Parts

Model	Product Name	Remarks
G0296A	QSFP+ 40GBASE-SR4	
J1519A	Optical Fiber Code	Multi-mode fiber, MPO connector, 3 m

2.3 Part Names

The parts names of the MZ1225A are as shown in Figure 2.3-1.
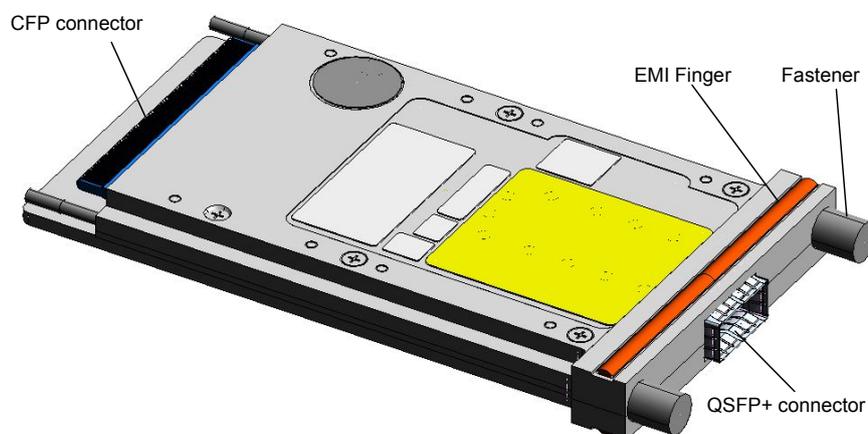
Figure 2.3-1   Parts Names

3   How to Use

This section explains how to use the MZ1225A.

3.1   Connection Precautions

To use the MZ1225A properly, you must keep the connection precautions written below:

1.   The insert/remove cycles of the CFP connector are about 180. Even though the insert/remove cycles are repeated, the maximum cycles are defined as 180.
Exceeding the maximum cycle may cause contact resistance increase, damage, or distortion of the CFP connector.

2.   The insert/remove cycles of the QSFP+ connector are about 180 cycles. Even though the insert/remove cycles are repeated, the maximum cycles are defined as 180.

3.2   Installation Method

How to install the QSFP+ module
1.   Hold both sides of the QSFP+ module between the tips of your first two fingers.

2.   Insert the QSFP+ module in the MD1260A until it clicks.

3.   Move the lever of the QSFP+ module up and connect the optical connector.

How to remove the QSFP+ module

1. Remove the module when the optical connector is attached.

2. Move the lever of the QSFP+ module down.

3. Hold both sides of the QSFP+ module between the tips of your first two fingers.

4. Pull out the QSFP+ module.
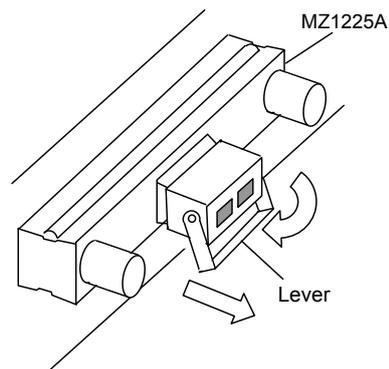
Figure 3.2-1   How to Remove the QSFP+ Module

How to install the MZ1225A in MD1260A

CAUTION ⚠️

Some devices installed in the MZ1225A and MD1260A may be damaged by impressed static electricity and short circuit.
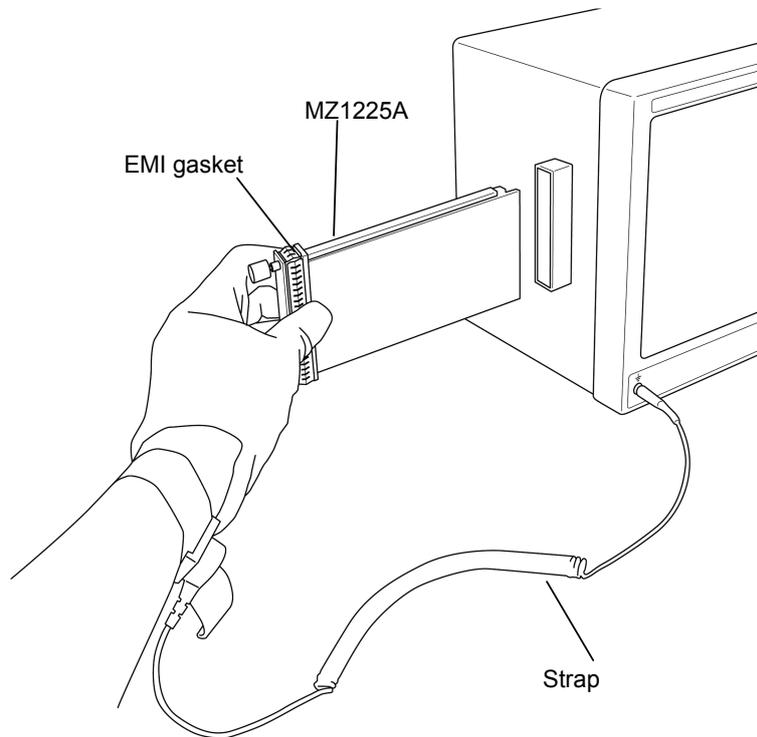
As a countermeasure against static electricity, the operator should wear an electrostatic discharge wrist strap.

Make sure that no dust is in the card edge part when installing the MZ1225A in the MD1260A. If dust enters the card edge part, it may cause connector failures and measurement problems.

When not connecting the MZ1225A with the MD1260A, cover the CFP slot of the MD1260A to keep the slot inside free of dust.

1. Wear an electrostatic discharge wrist strap and connect the MZ1225A to the ground terminal of the MD1260A front panel.

2. Slowly press the front end of the MZ1225A along the railing into the port socket, until the flange makes contact.
   Make sure not to damage the EMI gasket of the MZ1225A.
   There is a riding heat sink inside the measurement port for ventilation of CFP. Be careful of the friction between the MZ1225A and the riding heat sink when inserting the module.

3. Tighten the fixing screws clockwise (2 locations).

MZ1225A

EMI gasket

Strap

Figure 3.2-2   Countermeasure Against Static Electricity
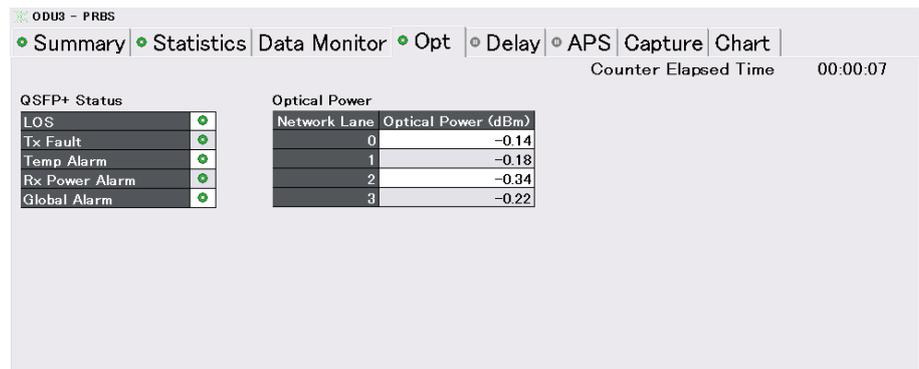
3.3   Display on MD 1260A

For the MD1260A operation method, refer to the MD1260A 40/100G Ethernet Analyzer Operation Manual.

When connecting the QSFP+ module to the MD1260A using the MZ1225A, the following items are displayed on the Opt. Tab.

Table 3.3-1   Items Displayed on Opt Tab

Item	Explanation
LOS	Displayed in red when LOS occurs on one or more receivers of the QSFP+ module.
Tx Fault	Displayed in red when an error occurs on one or more transmitters of the QSFP+ module.
Temp Alarm	Displayed in red when abnormal temperature occurs within the QSFP+ module.
Rx Power Alarm	Displayed in red when the optical level is too high or too low on one or more receivers of the QSFP+ module.
Global Alarm	Status of IntL pin of the QSFP+ module Displayed in red when an error occurs in the QSFP+ module.

For the error occurrence conditions, refer to the specifications of the QSFP+ module.

Figure 3.3-2   Items Displayed on Opt Tab When Using the MZ1225A

3.4   Remote Control for MD1260A Display Items

For the MD1260A remote operation method, refer to the MD1260A 40/100G Ethernet Analyzer Operation Manual (remote control).

The items displayed on the MD1260A Opt tab when using the MZ1225A can be read out by the CALClate:DATA command.

The ID specifying the read-out items and response data format are listed in the following table.

Table 3.4-1   ID for CALClate:DATA

Item	ID	Response Data Format
LOS	LOS	\<status\>
Tx Fault	TX_FAULT	\<status\>
Temp Alarm	TEMP_ALARM	\<status\>
Rx Power Alarm	POWER_ALARM	\<status\>
Global Alarm	GALARM	\<status\>
Optical Power	OPOWER	\<NR2\> (dBm)

The response data format is as follows.

Table 3.4-2   Response Data Format

Format	Explanation
\<status\>	0|1|2 The vale corresponding to the color status displayed on the screen will be returned. 0 Normal (green) 1 Abnormal (red) 2 History (orange)
\<NR2\>	Displays the numeric value. Example) 123, –5.00

Example of Use

To read out the status of Global Alarm:

```
CALC:DATA? GALARM
> 0
```

To read out Optical Power:

```
CALC:DATA? OPOWER
> -0.14,-0.18,-0.34,-0.22
```

4　Storage Precautions

Remove the QSFP+ module from the MZ1225A before storing this device.
Wipe dust, fingerprints, stains, spots, etc., from the surface of the MZ1225A before storing it.
Wrap the MZ1225A in plastic or a similar material to protect against dust.
Avoid storing the MZ1225A:

- Places that are exposed to direct sunlight
- Dusty places
- Damp places where condensation may occur on the MZ1225A surface
- Places where there are active gases causing corrosion
- Places where the MZ1225A may be oxidized
- Places where the MZ1225A may be exposed to strong vibration and shock
- Places where the MZ1225A might topple over.
- Places with extreme temperatures and relative humidity such as:
  Temperature: lower than –20°C or higher than 60°C
  Humidity:　90% or more

Recommended storage conditions
The MZ1225A should be stored in a place that meets the ambient conditions above, plus the following conditions if it is not to be used for a long time:

- Temperature　　　　10° to 30°C
- Humidity　　　　　40% to 80%
- Slight daily change in temperature and humidity.

5   Transporting and Disposal

The following describes precautions for transporting and disposing of the MZ1225A.

Repackaging

Repack the MZ1225A Min the packing material (box) in which it was delivered. If the packing material has been thrown away or damaged, repack the MZ1225A as follows:

1.   Get a corrugated cardboard, wooden, or aluminum box large enough to pack cushioning material in around the MZ1225A.

2.   Wrap the MZ1225A in plastic or a similar material to protect against water droplets, rain, and dust.

3.   Put the MZ1225A and accessory box in the packing box.

4.   Then, pack the MZ1225A in cushioning material so it cannot move inside the box.

5.   Secure the outside of the box with packing cord, adhesive tape, bands, or other similar materials.

Transporting

Avoiding vibrations as much as possible and meet the recommended storage conditions during transport.

Disposal

Follow the instructions of your local waste disposal office when finally disposing of the MZ1225A.

A.1 Adapter for QSFP+

Table A-1   Specifications for MZ1225A QSFP+ Adapter

Item	Specifications
Configuration	– Mainframe – MZ1225A Adapter for QSFP+ – Applicable Parts – Z1442A MD1260A Software/Manual CD-ROM
Interface	
Specification to be complied with	CFP MSA Hardware Specification Revision 1.4 CFP MSA Management Interface Specification Version 1.4 SFF-8436 Specification for QSFP+ COPPER AND OPTICAL MODULES Rev 3.5 SFF-8472 Specification for Diagnostic Monitoring Interface for Optical Transceivers Rev 11.0
MD1260A connector	hot-pluggable Impedance:differential 100 Ω [1], AC coupling Electrical specifications: Conforms to MD1260A CFP interface
QSFP+ connector	hot-pluggable Impedance: differential 100 Ω [1], DC coupling [2]
Insert/Removal Cycles	For MD1260A connection: 180 cycles For QSFP+ connection: 180 cycles
Environment Performance	
Temperature Rang	5° to +40°C, 20% to 80% (without condensation)
Storage Temperature Range	+20° to +60°C, 20% to 80% (without condensation)
Mass	1 kg or less
Size	14 (H) × 82 (W) × 145 (D) mm (Excluding projections)

[1]: Typical value

[2]: The external AC coupling is required.

A.2 QSFP+ Module

Table A.2-1   Specifications for QSFP+ 40GBASE-SR4

Item	Specifications
ModelName	G0296A
Number of fibers	4
Conformable fiber	Multi-mode fiber (50/125μm)
Rate per lane	10.3125 GBd ±100ppm
Optical Connector	MPO
Laser Safety	Class1M (IEC60825-1, 21 CFR 1040.10 Laser Safety Notice 50)
Transmission part	
Wavelength	840 to 860 nm
RMS spectrum width[1]	0.65 nm
Peak optical output per lane	≤4 dBm
Averaged optical output per lane	−7.6 to 2.4 dBm
Light amplitude per lane (OMA) [2]	−5.6 to 3 dBm
Extinction ratio	≥3 dB
Return loss tolerance	≤12 dB
Eye Mask	{X1, X2, X3, Y1, Y2, Y3 } : {0.23, 0.34, 0.43, 0.27, 0.35, 0.4}
Averaging output per lane on output off	≤−30 dBm

*1: RMS spectral width is the standard deviation of the spectrum.

*2: Even if the TDP < 1dB, the OMA(min) must exceed −6 dBm.

Table A.2-1   Specifications for QSFP+ 40GBASE-SR4 (Cont'd)

Item	Specifications
Reception part [*3]	
Wavelength	840 to 860 nm
Peak received light level per lane	≤4 dBm
Maximum averaged received light level per lane	–2.4 dBm
Received light level per lane (OMA)	≤3 dBm
Reflectance of receiver	≤–12 dB
Received stress sensitivity per lane (OMA)	≤–5.4 dBm
Eye penalty per lane	≤–1.9 dB
Power	≤1.5 W
Size	18.4×71×12.7 mm

*3:   Measured with conformance test signal at TP3 (see IEEE 802.3ba 86.8.4.7)

*4:   An optical signal of each lane is not multiplexed and output individually from MPO connector that terminates multiple optical fibers.