



QSFP-DR-100G

**OPTICAL TRANSCEIVER
MODULE**

Scenario Application Test Report (Juniper)

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1. Test Purpose

By building test scenarios and simulating the customer's usage environment, we test whether the module's performance meets the customer's requirements.

2. Test Results Summary

Table 2: Test Results

Items	Test Data	Remarks
Multi-Version	Pass	/
Connectivity	Pass	/
Module Basic Information	Pass	/
Digital Diagnostic Monitoring	Pass	/

3. Test Environment

3.1 Test Equipment Used

Table 3-1: Test Equipment Used

Vendor	Device	Soft Version
Juniper Switch	MX204	20.4R2.7
NVIDIA NICs	MCX623106AN-CDAT	22.43.1014
DELL Server	PowerEdge R860	/

3.2 Test Sample

Table 3-2: Test Sample

Product ID	P/N	Serial Number
#143155	QSFP-DR-100G	A2440004257

4. Test Data

Table 4: Scenario Application Testing

Test Topology	
Test Premise	1. Confirm the brand, quantity and placement of the switches to be tested. 2. Prepare control cables, test software and optical fiber patch cords. Power on the switches in advance. 3. Locate the Console port on the switch, which is usually marked as "CON" on the switch, although some switches may display it as "IOIOI" or a computer monitor icon, etc. Use a control cable to connect the switch to the computer.  4. Before connecting the software, it is necessary to confirm the connection port of the control cable. Go to the computer device manager, click on the ports (COM and LPT) to view the ports. After confirming the ports, proceed with the next step.
Test Method	Click to open the SecureCRT Portable software and enter the quick connection interface. ① Protocol selection: Serial ② Port selection: The same as the port you viewed in the previous step ③ Baud rate selection: The same as the baud rate of the port on the target switch ④ Flow control: Do not check this option The remaining configurations can keep the default values.
Test Steps	① Insert the module into the corresponding rate port of the switch, and connect the TX-RX ends with an optical fiber jumper or an MTP self-loop device. Observe whether the module is connected. If not connected, please check the jumper connection or the switch port configuration (login to the switch is required). ② Enter the test interface, input the account and password, log in to the switch and enter privileged mode. ③ According to the switch command configuration table, input the corresponding test command and view the relevant information: port status (connectivity), connection rate, alarm status, module basic information, DDM information, etc. Determine whether it meets the requirements.

Test Information

1. Read the switch model name and software version, and read the status of all ports on the switch

```
root>
root> show version
Model: mx204
Junos: 20.4R2.7
JUNOS OS Kernel 64-bit [20210220.a5d6a89_builder_stable_11]
JUNOS OS libs [20210220.a5d6a89_builder_stable_11]
JUNOS OS runtime [20210220.a5d6a89_builder_stable_11]
JUNOS OS time zone information [20210218.a5d6a89_builder_stable_11]
JUNOS network stack and utilities [20210414.022657_builder_junos_204_r2]
JUNOS libs [20210414.022657_builder_junos_204_r2]
JUNOS OS libs compat32 [20210220.a5d6a89_builder_stable_11]
JUNOS OS 32-bit compatibility [20210220.a5d6a89_builder_stable_11]
JUNOS libs compat32 [20210414.022657_builder_junos_204_r2]
JUNOS runtime [20210414.022657_builder_junos_204_r2]
JUNOS vmquest package [20210414.022657_builder_junos_204_r2]
JUNOS sflow mx [20210414.022657_builder_junos_204_r2]
JUNOS py extensions2 [20210414.022657_builder_junos_204_r2]
JUNOS py extensions [20210414.022657_builder_junos_204_r2]
JUNOS py base2 [20210414.022657_builder_junos_204_r2]
JUNOS py base [20210414.022657_builder_junos_204_r2]
JUNOS OS vmquest [20210218.a5d6a89_builder_stable_11]
JUNOS OS crypto [20210218.a5d6a89_builder_stable_11]
JUNOS OS boot-ve files [20210218.a5d6a89_builder_stable_11]
JUNOS na telemetry [20.4R2.7]

root> show interfaces et-0/0/1 detail
Physical interface: et-0/0/1, Enabled, Physical link is Up
  Interface index: 150, SNMP ifIndex: 575, Generation: 193
  Link-level type: Ethernet, MTU: 1514, MRU: 1522, Speed: 100Gbps,
  BPDU Error: None, Loop Detect PDU Error: None, Loopback: Disabled,
  Source filtering: Disabled, Flow control: Enabled
  Pad to minimum frame size: Disabled
  Device flags : Present Running
  Interface flags: SNMP-Traps Internal: 0x4000
  Link flags : None
  CoS queues : 8 supported, 8 maximum usable queues
  Schedulers : 0
  Hold-times : Up 0 ms, Down 0 ms
  Damping : half-life: 0 sec, max-suppress: 0 sec, reuse: 0, suppress: 0, state: unsuppressed
  Current address: c4:09:b7:ad:13:77, Hardware address: c4:09:b7:ad:13:77
  Last flapped : 2025-05-16 11:24:01 UTC (00:06:35 ago)
  Statistics last cleared: Never
  Traffic statistics:
    Input bytes : 0 0 bps
    Output bytes : 0 0 bps
    Input packets : 0 0 pps
    Output packets : 0 0 pps
  IPv6 transit statistics:
    Input bytes : 0
    Output bytes : 0
    Input packets : 0
    Output packets : 0
  Egress queues: 8 supported, 4 in use
  Queue counters:
    Queued packets Transmitted packets Dropped packets
    0 0 0 0
    1 0 0 0
    2 0 0 0
    3 0 0 0
  Queue number:
    Mapped forwarding classes
    0 best-effort
    1 expedited-forwarding
    2 assured-forwarding
    3 network-control
  Active alarms : None
  Active defects : None
  PCS statistics
    Bit errors : 8
    Errored blocks : 15
  Ethernet FEC Mode : NONE
  Ethernet FEC statistics
    Errors
    FEC Corrected Errors 0
    FEC Uncorrected Errors 0
    FEC Corrected Errors Rate 0
    FEC Uncorrected Errors Rate 0
  Preclassifier statistics:
    Traffic Class Received Packets Transmitted Packets Dropped Packets
    real-time 0 0 0
    network-control 6711 6711 0
    best-effort 0 0 0
  Interface transmit statistics: Disabled

root>
```

Test Information

2. Read the module's basic information from the switch side

```

root> show interfaces et-0/0/1 extensive
Physical interface: et-0/0/1, Enabled, Physical link is Up
Interface index: 150, SNMP ifIndex: 527, Generation: 153
Link-level type: Ethernet, MTU: 1514, MRU: 1522, Speed: 100Gbps,
BPDU Error: None, Loop Detect PDU Error: None, Loopback: Disabled,
Source filtering: Disabled, Flow control: Enabled
Pad to minimum frame size: Disabled
Device flags : Present Running
Interface flags: SNMP-Traps Internal: 0x4000
Link flags : None
CoS queues : 8 supported, 8 maximum usable queues
Schedulers : 0
Hold-times : Up 0 ms, Down 0 ms
Damping : half-life: 0 sec, max-suppress: 0 sec, reuse: 0, suppress: 0, state: unsuppressed
Current address: c4:09:b7:ad:13:77, Hardware address: c4:09:b7:ad:13:77
Last flapped : 2024-10-10 09:25:08 UTC (00:04:38 ago)
Statistics last cleared: 2024-10-10 09:28:30 UTC (00:01:16 ago)
Traffic statistics:
Input bytes : 0 0 bps
Output bytes : 0 0 bps
Input packets: 0 0 pps
Output packets: 0 0 pps
IPv6 transit statistics:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0

Dropped traffic statistics due to STP State:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0,
L3 incompletes: 0, L2 channel errors: 0, L2 mismatch timeouts: 0,
FIFO errors: 0, Resource errors: 0
Output errors:
Carrier transitions: 0, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,
FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0

Dropped traffic statistics due to STP State:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0
Input errors:
Errors: 0, Drops: 0, Framing errors: 0, Runts: 0, Policed discards: 0,
L3 incompletes: 0, L2 channel errors: 0, L2 mismatch timeouts: 0,
FIFO errors: 0, Resource errors: 0
Output errors:
Carrier transitions: 0, Errors: 0, Drops: 0, Collisions: 0, Aged packets: 0,
FIFO errors: 0, HS link CRC errors: 0, MTU errors: 0, Resource errors: 0
Egress queues: 8 supported, 4 in use
Queue counters: Queued packets Transmitted packets Dropped packets
0 0 0 0
1 0 0 0
2 0 0 0
3 0 0 0
Queue number: Mapped forwarding classes
0 best-effort
1 expedited-forwarding
2 assured-forwarding
3 network-control
Active alarms : None
Active defects : None
PCS statistics Seconds
Bit errors 0
Errored blocks 0
Ethernet FEC Mode : NONE
Ethernet FEC statistics Errors
FEC Corrected Errors 0
FEC Uncorrected Errors 0

```

Test Information

```
FEC Corrected Errors Rate      0
FEC Uncorrected Errors Rate   0
MAC statistics:
  Receive    Transmit
Total octets      0      0
Total packets    0      0
Unicast packets  0      0
Broadcast packets 0      0
Multicast packets 0      0
CRC/Align errors 0      0
FIFO errors      0      0
MAC control frames 0      0
MAC pause frames  0      0
Oversized frames  0
Jabber frames     0
Fragment frames   0
VLAN tagged frames 0
Code violations   0
Total errors      0      0
Filter statistics:
Input packet count      0
Input packet rejects    0
Input DA rejects        0
Input SA rejects        0
Output packet count     0
Output packet pad count 0
Output packet error count 0
CAM destination filters: 0, CAM source filters: 0
Packet Forwarding Engine configuration:
  Destination slot: 0 (0x00)
CoS information:
Direction : Output
CoS transmit queue      Bandwidth      Buffer Priority Limit
  %      bps      %      usec
0 best-effort    95  95000000000  95      0  low  none
3 network-control 5  50000000000   5      0  low  none
Preclassifier statistics:
Traffic Class  Received Packets  Transmitted  Packets  Dropped Packets
real-time      0              0            0
network-control 0              0            0
best-effort    0              0            0
Interface transmit statistics: Disabled
```

3. Read the DDM information of the module

```
root> show interfaces diagnostics optics
Physical interface: et-0/0/1
Module temperature      : 38 degrees C / 101 degrees F
Module voltage          : 3.2270 V
Module temperature high alarm : Off
Module temperature low alarm  : Off
Module temperature high warning : Off
Module temperature low warning : Off
Module voltage high alarm : Off
Module voltage low alarm : Off
Module voltage high warning : Off
Module voltage low warning : Off
Module temperature high alarm threshold : 75 degrees C / 167 degrees F
Module temperature low alarm threshold : -5 degrees C / 23 degrees F
Module temperature high warning threshold : 70 degrees C / 158 degrees F
Module temperature low warning threshold : 0 degrees C / 32 degrees F
Module voltage high alarm threshold : 3.6300 V
Module voltage low alarm threshold : 2.9700 V
Module voltage high warning threshold : 3.4600 V
Module voltage low warning threshold : 3.1300 V
Laser bias current high alarm threshold : 119.999 mA
Laser bias current low alarm threshold : 19.999 mA
Laser bias current high warning threshold : 109.999 mA
Laser bias current low warning threshold : 29.999 mA
Laser output power high alarm threshold : 3.1623 mW / 5.00 dBm
Laser output power low alarm threshold : 0.3236 mW / -4.90 dBm
Laser output power high warning threshold : 2.5119 mW / 4.00 dBm
Laser output power low warning threshold : 0.4074 mW / -3.90 dBm
Laser rx power high alarm threshold : 3.1623 mW / 5.00 dBm
```

```
Laser rx power low alarm threshold : 0.1622 mW / -7.90 dBm
Laser rx power high warning threshold : 2.5119 mW / 4.00 dBm
Laser rx power low warning threshold : 0.2042 mW / -6.90 dBm
```

Lane 0

```
Laser bias current : 89.043 mA
Laser output power : 1.729 mW / 2.38 dBm
Laser receiver power : 1.682 mW / 2.26 dBm
Laser bias current high alarm : Off
Laser bias current low alarm : Off
Laser bias current high warning : Off
Laser bias current low warning : Off
Laser receiver power high alarm : Off
Laser receiver power low alarm : Off
Laser receiver power high warning : Off
Laser receiver power low warning : Off
Tx loss of signal functionality alarm : Off
Rx loss of signal alarm : Off
Tx laser disabled alarm : Off
```

root>

4. Read the NIC model and the status of all ports

```
[root@localhost ~]#
[root@localhost ~]# mlxfwmanager -d mlx5_8
Querying Mellanox devices firmware ...
```

Device #1:

```
-----
Device Type:      ConnectX6DX
Part Number:      MCX623106AN-CDA_AX
Description:      ConnectX-6 Dx EN adapter card; 100GbE; Dual-port QSFP56; PCIe 4.0/3.0 x16;
PSID:            MT_0000000359
PCI Device Name:  mlx5_8
Base GUID:        e8ebd303009c65e0
Base MAC:         e8ebd39c65e0
Versions:
  FW              22.43.1014    N/A
  PXE             3.7.0500     N/A
  UEFI            14.36.0016    N/A
Status:          No matching image found
```

```
[root@localhost ~]# mlxlink -d mlx5_8 -c
```

Operational Info

```
-----
State : Active
Physical state : ETH_AN_FSM_ENABLE
Speed : 100G
Width : 4x
FEC : No FEC
Loopback Mode : No Loopback
Auto Negotiation : ON
```

Supported Info

```
-----
Enabled Link Speed (Ext.) : 0x000007f2 (100G_2X,100G_4X,50G_1X,50G_2X,40G,25G,10G,1G)
Supported Cable Speed (Ext.) : 0x00000200 (100G_4X)
```

Troubleshooting Info

```
-----
Status Opcode : 0
Group Opcode : N/A
Recommendation : No issue was observed
```

Tool Information

```
-----
Firmware Version : 22.43.1014
amBER Version : 3.2
MFT Version : mft 4.28.0-92
```

Physical Counters and BER Info

```
-----
Time Since Last Clear [Min] : 3.0
Effective Physical Errors : 0
Effective Physical BER : 15E-255
Raw Physical Errors Per Lane : 0,0,0,0
Raw Physical BER : 15E-255
```

5. Read the module basic information on NIC

```

Module Info
-----
Identifier                : QSFP28
Compliance                : 100GBASE-DR, with CAUI-4 without FEC
Cable Technology          : 1310 nm EML
Cable Type                : Optical Module (separated)
OUI                        : Other
Vendor Name               : FS
Vendor Part Number        : QSFP-DR-100G
Vendor Serial Number      : A2440004257
Rev                       : 01
Wavelength [nm]           : 1310
Transfer Distance [m]     : 0
Attenuation (5g,7g,12g) [dB] : N/A
FW Version                : N/A
Digital Diagnostic Monitoring : Yes
Power Class               : 4.5 W max
CDR RX                    : ON,OFF,OFF,OFF
CDR TX                     : ON,ON,ON,ON
LOS Alarm                  : N/A
Temperature [C]           : 33 [-5..75]
Voltage [mV]              : 3267.8 [2970..3630]
Bias Current [mA]         : 78.364,0,0,0 [20..120]
Rx Power Current [dBm]    : 1.752,-40,-40,-40 [-7.905..5]
Tx Power Current [dBm]    : 2.636,-40,-40,-40 [-4.908..5]
SNR Media Lanes [dB]      : N/A
SNR Host Lanes [dB]       : N/A
IB Cable Width             : 1x,2x,4x
Memory Map Revision       : 8
Linear Direct Drive        : 0
Cable Breakout             : Channels implemented [1,2,3,4]/Far end is unspecified
SMF Length                 : N/A
MAX Power                  : 0
Cable Rx AMP               : 0
Cable Rx Emphasis          : 0
Cable Rx Post Emphasis     : 0
Cable Tx Equalization      : 0
Wavelength Tolerance       : 2.2nm
Module State               : N/A
DataPath State [per lane]  : N/A,N/A,N/A,N/A
Rx Output Valid [per lane] : 0,0,0,0
Nominal bit rate           : 25.750Gb/s
Rx Power Type              : Average power
Manufacturing Date         : 22_10_24
Active Set Host Compliance Code : N/A
Active Set Media Compliance Code : N/A
Error Code Response        : N/A
Module FW Fault            : N/A
DataPath FW Fault          : N/A
Tx Fault [per lane]        : 0,0,0,0
Tx LOS [per lane]          : 0,0,0,0
Tx CDR LOL [per lane]      : 0,0,0,0
Rx LOS [per lane]          : 0,0,0,0
Rx CDR LOL [per lane]      : 0,0,0,0
Tx Adaptive EQ Fault [per lane] : 0,0,0,0

```

6. Read the module DDM on NIC

```

[root@localhost ~]# mlxlink -d mlx5_8 -cable -ddm

Operational Info
-----
State                : Active
Physical state       : ETH_AN_FSM_ENABLE
Speed                : 100G
Width                : 4x
FEC                  : No FEC
Loopback Mode        : No Loopback
Auto Negotiation     : ON

Supported Info
-----
Enabled Link Speed (Ext.) : 0x000007f2 (100G_2X,100G_4X,50G_1X,50G_2X,40G,25G,10G,1G)
Supported cable speed (Ext.) : 0x00000200 (100G_4X)

Troubleshooting Info
-----
Status Opcode        : 0
Group Opcode         : N/A
Recommendation        : No issue was observed

Tool Information
-----
Firmware Version      : 22.43.1014
amBER Version         : 3.2
MFT Version           : mft 4.28.0-92

```

	Cable DDM Information <pre> ----- Temperature : 34C Voltage : 3.2670V Channels : Channel 1 ,Channel 2 ,Channel 3 ,Channel 4 RX Power : 2.000dBm ,-40.000dBm ,-40.000dBm ,-40.000dBm TX Power : 2.000dBm ,-40.000dBm ,-40.000dBm ,-40.000dBm TX Bias : 78.486mA ,0.000mA ,0.000mA ,0.000mA ----- DDM Flags ----- Temperature Alarm high : 0 Temperature warning high : 0 Temperature warning low : 0 Temperature Alarm low : 0 Voltage Alarm high : 0 Voltage warning high : 0 Voltage warning low : 0 Voltage Alarm low : 0 </pre>
Test Conclusion	After completing the above test content, all the test information should be copied and pasted into a TXT document.
Remarks	/