



QSFP-LR-100G

**OPTICAL TRANSCEIVER
MODULE**

Scenario Application Test Report (Cisco)

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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
Cisco Switch	C93180YC-EX	07.69
NVIDIA NICs	MCX516A-CCAT	16.35.4030
DELL Server	PowerEdge R860	/



3.2 Test Sample

Table 3-2: Test Sample

Product ID	P/N	Serial Number
#143535	QSFP-LR-100G	A2310221612

4. Test Data

Table 4: Scenario Application Testing

<p>Test Topology</p>	
<p>Test Premise</p>	<ol style="list-style-type: none"> 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.  <ol style="list-style-type: none"> 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.
<p>Test Method</p>	<p>Click to open the SecureCRT Portable software and enter the quick connection interface.</p> <ol style="list-style-type: none"> 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 <p>The remaining configurations can keep the default values.</p>
<p>Test Steps</p>	<ol style="list-style-type: none"> 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.

<p>Test Information</p>	<p>1. Read the switch model name and software version, and read the status of all ports on the switch</p> <pre>Cisco_C93180YC-EX# show version Cisco Nexus Operating System (NX-OS) Software TAC support: http://www.cisco.com/tac Copyright (C) 2002-2023, Cisco and/or its affiliates. All rights reserved. The copyrights to certain works contained in this software are owned by other third parties and used and distributed under their own licenses, such as open source. This software is provided "as is," and unless otherwise stated, there is no warranty, express or implied, including but not limited to warranties of merchantability and fitness for a particular purpose. Certain components of this software are licensed under the GNU General Public License (GPL) version 2.0 or GNU General Public License (GPL) version 3.0 or the GNU Lesser General Public License (LGPL) Version 2.1 or Lesser General Public License (LGPL) Version 2.0. A copy of each such license is available at http://www.opensource.org/licenses/gpl-2.0.php and http://opensource.org/licenses/gpl-3.0.html and http://www.opensource.org/licenses/lgpl-2.1.php and http://www.gnu.org/licenses/old-licenses/library.txt.</pre>
	<pre>Software BIOS: version 07.69 NXOS: version 10.2(5) [Maintenance Release] BIOS compile time: 04/07/2021 NXOS image file is: bootflash:///nxos64-cs.10.2.5.M.bin NXOS compile time: 3/10/2023 12:00:00 [03/03/2023 12:00:11] Hardware cisco Nexus9000 C93180YC-EX chassis Intel(R) Xeon(R) CPU @ 1.80GHz with 24617876 kB of memory. Processor Board ID FDO221418Y5 Device name: Cisco_C93180YC-EX bootflash: 7906304 kB Kernel uptime is 16 day(s), 7 hour(s), 41 minute(s), 3 second(s) Last reset at 854128 usecs after Tue Sep 10 01:51:59 2024 Reason: Module PowerCycled System version: Service: HW check by card-client plugin Core Plugin, Ethernet Plugin Active Package(s):</pre>

Test Information

Cisco_C93180YC-EX#
Cisco_C93180YC-EX# show interface status

Port	Name	Status	Vlan	Duplex	Speed	Type
mgmt0	--	notconnec	routed	auto	auto	--

Port	Name	Status	Vlan	Duplex	Speed	Type
Eth1/1	--	xcvrAbsen	1	auto	1000	--
Eth1/2	--	xcvrAbsen	1	auto	1000	--
Eth1/3	--	xcvrAbsen	1	auto	auto	--
Eth1/4	--	xcvrAbsen	1	auto	auto	--
Eth1/5	--	xcvrAbsen	1	auto	auto	--
Eth1/6	--	xcvrAbsen	1	auto	auto	--
Eth1/7	--	xcvrAbsen	routed	auto	auto	--
Eth1/8	--	xcvrAbsen	1	auto	auto	--
Eth1/9	--	xcvrAbsen	1	auto	auto	--
Eth1/10	--	xcvrAbsen	1	auto	auto	--
Eth1/11	--	xcvrAbsen	1	auto	auto	--
Eth1/12	--	xcvrAbsen	1	auto	auto	--
Eth1/13	--	xcvrAbsen	1	auto	auto	--
Eth1/14	--	xcvrAbsen	1	auto	auto	--
Eth1/15	--	xcvrAbsen	1	auto	auto	--
Eth1/16	--	xcvrAbsen	1	auto	auto	--
Eth1/17	--	xcvrAbsen	1	auto	auto	--
Eth1/18	--	xcvrAbsen	2	auto	auto	--
Eth1/19	--	xcvrAbsen	1	auto	auto	--
Eth1/20	--	xcvrAbsen	2	auto	10G	--
Eth1/21	--	xcvrAbsen	1	auto	auto	--
Eth1/22	--	xcvrAbsen	1	auto	10G	--
Eth1/23	--	xcvrAbsen	1	auto	auto	--
Eth1/24	--	xcvrAbsen	1	auto	25G	--
Eth1/25	--	xcvrAbsen	1	auto	auto	--
Eth1/26	--	xcvrAbsen	1	auto	25G	--
Eth1/27	--	xcvrAbsen	1	auto	auto	--
Eth1/28	--	xcvrAbsen	2	auto	auto	--
Eth1/29	--	xcvrAbsen	1	auto	auto	--
Eth1/30	--	xcvrAbsen	1	auto	auto	--
Eth1/31	--	xcvrAbsen	1	auto	auto	--
Eth1/32	--	xcvrAbsen	2	auto	auto	--
Eth1/33	--	xcvrAbsen	1	auto	auto	--
Eth1/34	--	xcvrAbsen	1	auto	auto	--
Eth1/35	--	xcvrAbsen	1	auto	auto	--
Eth1/36	--	xcvrAbsen	1	auto	auto	--
Eth1/37	--	xcvrAbsen	1	auto	auto	--
Eth1/38	--	xcvrAbsen	1	auto	auto	--
Eth1/39	--	xcvrAbsen	1	auto	auto	--
Eth1/40	--	xcvrAbsen	1	auto	auto	--
Eth1/41	--	xcvrAbsen	1	auto	auto	--
Eth1/42	--	xcvrAbsen	1	auto	auto	--
Eth1/43	--	xcvrAbsen	1	auto	auto	--
Eth1/44	--	xcvrAbsen	1	auto	auto	--
Eth1/45	--	xcvrAbsen	1	auto	auto	--
Eth1/46	--	xcvrAbsen	1	auto	auto	--
Eth1/47	--	xcvrAbsen	1	auto	auto	--
Eth1/48	--	xcvrAbsen	1	auto	auto	--
Eth1/49	--	connected	1	full	100G	QSFP-100G-L
R						
Eth1/50	--	xcvrAbsen	1	auto	auto	--
Eth1/51	--	xcvrAbsen	1	auto	40G	--
Eth1/52	--	xcvrAbsen	1	auto	auto	--
Eth1/53	--	connected	1	full	100G	QSFP-100G-L
R						
Eth1/54	--	xcvrAbsen	1	auto	auto	--

Test Information

```

2. Read the module's basic information from the switch side
Cisco_C93180YC-EX#
Cisco_C93180YC-EX# show interface ethernet 1/49
Ethernet1/49 is up
admin state is up, Dedicated Interface
  Hardware: 1000/10000/25000/40000/50000/100000 Ethernet, address: 700f.6a4d.df7
0 (bia 700f.6a4d.df70)
MTU 1500 bytes, BW 100000000 Kbit , DLY 10 usec
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, medium is broadcast
Port mode is access
full-duplex, 100 Gb/s, media type is 100G
Beacon is turned off
Auto-Negotiation is turned on FEC mode is Auto
Input flow-control is off, output flow-control is off
Auto-mdix is turned off
Rate mode is dedicated
Switchport monitor is off
EtherType is 0x8100
EEE (efficient-ethernet) : n/a
  admin fec state is auto, oper fec state is off
Last link flapped 00:02:07
Last clearing of "show interface" counters never
1 interface resets
Load-Interval #1: 30 seconds
  30 seconds input rate 0 bits/sec, 0 packets/sec
  30 seconds output rate 0 bits/sec, 0 packets/sec
  input rate 0 bps, 0 pps; output rate 0 bps, 0 pps
Load-Interval #2: 5 minute (300 seconds)
  300 seconds input rate 0 bits/sec, 0 packets/sec
  300 seconds output rate 0 bits/sec, 0 packets/sec
  input rate 0 bps, 0 pps; output rate 0 bps, 0 pps
RX
  0 unicast packets 0 multicast packets 0 broadcast packets
  0 input packets 0 bytes
  0 jumbo packets 0 storm suppression bytes
  0 runts 0 giants 0 CRC 0 no buffer
  0 input error 0 short frame 0 overrun 0 underrun 0 ignored
  0 watchdog 0 bad etype drop 0 bad proto drop 0 if down drop
  0 input with dribble 0 input discard
  0 Rx pause
  0 Stomped CRC
TX
  0 unicast packets 0 multicast packets 0 broadcast packets
  0 output packets 0 bytes
  0 jumbo packets
  0 output error 0 collision 0 deferred 0 late collision
  0 lost carrier 0 no carrier 0 babble 0 output discard
  0 Tx pause
    
```

Test Information

3. Read the module DDM on NIC

```
Cisco_C93180YC-EX#
Cisco_C93180YC-EX# show interface ethernet 1/49 transceiver details
Ethernet1/49
  transceiver is present
  type is QSFP-100G-LR
  name is FS
  part number is QSFP-LR-100G
  revision is 01
  serial number is A2310221622
  nominal bitrate is 25500 MBit/sec
  Link length supported for 9/125um fiber is 10 km
  cisco id is 17
  cisco extended id number is 206
```

Lane Number:1 Network Lane

SFP Detail Diagnostics Information (internal calibration)

	Current Measurement	Alarms High	Low	Warnings High	Low
Temperature	29.91 C	75.00 C	-5.00 C	70.00 C	0.00 C
Voltage	3.23 V	3.63 V	2.97 V	3.46 V	3.13 V
Current	89.74 mA	120.00 mA	20.00 mA	110.00 mA	30.00 mA
Tx Power	3.41 dBm	5.49 dBm	-3.40 dBm	4.49 dBm	-2.40 dBm
Rx Power	3.55 dBm	5.49 dBm	-9.70 dBm	4.49 dBm	-8.72 dBm
Transmit Fault Count	= 0				

Note: ++ high-alarm; + high-warning; -- low-alarm; - low-warning

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

```
root@fs2-PowerEdge-R860:~# mlxfwmanager -u
Querying Mellanox devices firmware ...
```

Device #3:

```
-----
Device Type:    ConnectX5
Part Number:    MCX516A-CCA_Ax
Description:    ConnectX-5 EN network interface card; 100GbE dual-port QSFP28; PCIe3.0 x16; tall bracket; ROHS R6
PSID:          MT_0000000012
PCI Device Name: /dev/mst/mt4119_pciconf1
Base GUID:      b8599f03001d04d2
Base MAC:       b8599f1d04d2
Versions:
  Current      Available
FW             16.35.4030  N/A
PXE            3.6.0902    N/A
UEFI           14.29.0015  N/A
```

```
Status:        No matching image found
```



```
root@fs2-PowerEdge-R860:~#
root@fs2-PowerEdge-R860:~# mlxlink -d/dev/mst/mt4119_pciconf1.1|
```

Operational Info

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

Supported Info

```
-----
Enabled Link Speed : 0xf8f1f0d3 (100G,50G,40G,25G,10G,1G)
Supported Cable Speed : 0x00800000 (100G)
```

Troubleshooting Info

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

Tool Information

```
-----
Firmware Version : 16.35.4030
MFT Version : mft 4.28.0-92
```

5. Read the module basic information on NIC

```
root@fs2-PowerEdge-R860:~# mlxlink -d/dev/mst/mt4119_pciconf1.1 -c -m
```

Operational Info

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

Supported Info

```
-----
Enabled Link Speed : 0xf8f1f0d3 (100G,50G,40G,25G,10G,1G)
Supported Cable Speed : 0x00800000 (100G)
```

Troubleshooting Info

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

Tool Information

```
-----
Firmware Version : 16.35.4030
MFT Version : mft 4.28.0-92
```

Physical Counters and BER Info

```
-----
Time Since Last Clear [Min] : 10.6
Effective Physical Errors : 0
Raw Physical Errors Per Lane : 0,0,0,0
Effective Physical BER : 15E-255
Raw Physical BER : 15E-255
```

Module Info

```

-----
Identifier           : QSFP28
Compliance          : 100G-LR, with CAUI-4 without FEC
Cable Technology    : 1310 nm EML
Cable Type         : Optical Module (separated)
OUI                 : Mellanox
Vendor Name        : FS
Vendor Part Number  : QSFP-LR-100G
Vendor Serial Number : A2310221612
Rev                : 01
Wavelength [nm]   : 1311
Transfer Distance [m] : 0
Attenuation (5g,7g,12g) [dB] : N/A
FW Version        : 81.83.18000
Digital Diagnostic Monitoring : Yes
Power Class       : 4.0 W max
CDR RX           : N/A
CDR TX           : N/A
LOS Alarm        : N/A
Temperature [C]  : 48 [-5..75]
Voltage [mV]     : 3260.5 [2970..3630]
Bias Current [mA] : 89.624,0,0,0 [20..120]
Rx Power Current [dBm] : 4,-40,-40,-40 [-10..6]
Tx Power Current [dBm] : 4,-40,-40,-40 [-4..6]
    
```

6. Read the module DDM on NIC

```
root@fs2-PowerEdge-R860:~# mlxlink -d/dev/mst/mt4119_pciconf1.1 --cable --ddm
```

Operational Info

```

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

Supported Info

```

-----
Enabled Link Speed : 0xf8f1f0d3 (100G,50G,40G,25G,10G,1G)
Supported Cable Speed : 0x00800000 (100G)
    
```

Troubleshooting Info

```

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

Tool Information

```

-----
Firmware Version   : 16.35.4030
MFT Version        : mft 4.28.0-92
    
```

Cable DDM Information

```

-----
Temperature        : 48C
Voltage            : 3.2610V
Channels           : Channel 1 ,Channel 2 ,Channel 3 ,Channel 4
RX Power           : 4.000dBm , -40.000dBm , -40.000dBm , -40.000dBm
TX Power           : 4.000dBm , -40.000dBm , -40.000dBm , -40.000dBm
TX Bias            : 89.654mA , 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
    
```

	<p>Channel 1 Flags</p> <p>-----</p> <p>RX Power Alarm high : 0 RX Power Warning high : 0 RX Power Warning low : 0 RX Power Alarm low : 0</p> <p>TX Power Alarm high : 0 TX Power Warning high : 0 TX Power Warning low : 0 TX Power Alarm low : 0</p> <p>TX Bias Alarm high : 0 TX Bias Warning high : 0 TX Bias Warning low : 0 TX Bias Alarm low : 0</p> <p>Channel 2 Flags</p> <p>-----</p> <p>RX Power Alarm high : 0 RX Power Warning high : 0 RX Power Warning low : 0 RX Power Alarm low : 0</p> <p>TX Power Alarm high : 0 TX Power Warning high : 0 TX Power Warning low : 0 TX Power Alarm low : 0</p> <p>TX Bias Alarm high : 0 TX Bias Warning high : 0 TX Bias Warning low : 0 TX Bias Alarm low : 0</p> <p>Channel 3 Flags</p> <p>-----</p> <p>RX Power Alarm high : 0 RX Power Warning high : 0 RX Power Warning low : 0 RX Power Alarm low : 0</p> <p>TX Power Alarm high : 0 TX Power Warning high : 0 TX Power Warning low : 0 TX Power Alarm low : 0</p> <p>TX Bias Alarm high : 0 TX Bias Warning high : 0 TX Bias Warning low : 0 TX Bias Alarm low : 0</p> <p>Channel 4 Flags</p> <p>-----</p> <p>RX Power Alarm high : 0 RX Power Warning high : 0 RX Power Warning low : 0 RX Power Alarm low : 0</p> <p>TX Power Alarm high : 0 TX Power Warning high : 0 TX Power Warning low : 0 TX Power Alarm low : 0</p> <p>TX Bias Alarm high : 0 TX Bias Warning high : 0 TX Bias Warning low : 0 TX Bias Alarm low : 0</p> <p>DDM Thresholds</p> <p>-----</p> <table border="0"> <thead> <tr> <th>Thresholds</th> <th>: Temperature</th> <th>, Voltage</th> <th>, RX Power</th> <th>, TX Power</th> <th>, TX Bias</th> </tr> </thead> <tbody> <tr> <td>High alarm threshold</td> <td>: 75C</td> <td>, 3.630V</td> <td>, 5.500dBm</td> <td>, 5.500dBm</td> <td>, 120.000mA</td> </tr> <tr> <td>High warning threshold</td> <td>: 70C</td> <td>, 3.460V</td> <td>, 4.500dBm</td> <td>, 4.500dBm</td> <td>, 110.000mA</td> </tr> <tr> <td>Low warning threshold</td> <td>: 0C</td> <td>, 3.130V</td> <td>, -8.700dBm</td> <td>, -2.400dBm</td> <td>, 30.000mA</td> </tr> <tr> <td>Low alarm threshold</td> <td>: -5C</td> <td>, 2.970V</td> <td>, -9.698dBm</td> <td>, -3.400dBm</td> <td>, 20.000mA</td> </tr> </tbody> </table>	Thresholds	: Temperature	, Voltage	, RX Power	, TX Power	, TX Bias	High alarm threshold	: 75C	, 3.630V	, 5.500dBm	, 5.500dBm	, 120.000mA	High warning threshold	: 70C	, 3.460V	, 4.500dBm	, 4.500dBm	, 110.000mA	Low warning threshold	: 0C	, 3.130V	, -8.700dBm	, -2.400dBm	, 30.000mA	Low alarm threshold	: -5C	, 2.970V	, -9.698dBm	, -3.400dBm	, 20.000mA
Thresholds	: Temperature	, Voltage	, RX Power	, TX Power	, TX Bias																										
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Test Conclusion	After completing the above test content, all the test information should be copied and pasted into a TXT document.																														
Remarks	/																														