



QSFP-BX10-100G

**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	N9K-9316D	10.5(1)
NVIDIA NICs	MCX755106AS-HEAT	28.43.1014
DELL Server	PowerEdge R860	/

3.2 Test Sample

Table 3-2: Test Sample

Product ID	P/N	Serial Number
#175135	QSFP-BX10-100G	A2440002406

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

```
N9K-9316D#
N9K-9316D#
N9K-9316D# show version
Cisco Nexus Operating System (NX-OS) Software
TAC support: http://www.cisco.com/tac
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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.
```

```
Software
  BIOS: version 05.51
  NXOS: version 10.5(1) [Feature Release]
  Host NXOS: version 10.5(1)
  BIOS compile time: 11/29/2023
  NXOS image file is: bootflash:///nxos64-cs.10.5.1.F.bin
  NXOS compile time: 7/31/2024 12:00:00 [07/26/2024 02:00:41]
  NXOS boot mode: LXC
```

```
Hardware
  cisco Nexus9000 C9316D-GX Chassis
  Intel(R) Xeon(R) CPU D-1526 @ 1.80GHz with 32803124 kB of memory.
  Processor Board ID FDO23430E7Z
  Device name: N9K-9316D
  bootflash: 115805708 kB
```

Kernel uptime is 14 day(s), 7 hour(s), 54 minute(s), 14 second(s)

```
Last reset at 540531 usecs after Thu Nov 16 18:01:33 2000
Reason: Module PowerCycled
System version:
Service: HW check by card-client
```

```
plugin
  Core Plugin, Ethernet Plugin
```

Active Package(s):

```
N9K-9316D# show interface status
```

Port	Name	Status	Vlan	Duplex	Speed	Type
mgmt0	--	connected	routed	full	1000	--

Port	Name	Status	Vlan	Duplex	Speed	Type
Eth1/1/1	--	xcvrAbsen	1	auto	auto	--
Eth1/1/2	--	xcvrAbsen	1	auto	auto	--
Eth1/2/1	--	xcvrAbsen	1	auto	auto	--
Eth1/2/2	--	xcvrAbsen	1	auto	auto	--
Eth1/2/3	--	xcvrAbsen	1	auto	auto	--
Eth1/2/4	--	xcvrAbsen	1	auto	auto	--
Eth1/3/1	--	xcvrAbsen	1	auto	auto	--
Eth1/3/2	--	xcvrAbsen	1	auto	auto	--

Test Information

```

Eth1/4/1  --      xcvrAbsen 1      auto  auto  --
Eth1/4/2  --      xcvrAbsen 1      auto  auto  --
Eth1/4/3  --      xcvrAbsen 1      auto  auto  --
Eth1/4/4  --      xcvrAbsen 1      auto  auto  --
Eth1/5    --      xcvrAbsen 1      auto  100G  --
Eth1/6/1  --      xcvrAbsen 1      auto  auto  --
Eth1/6/2  --      xcvrAbsen 1      auto  auto  --
Eth1/7/1  --      xcvrAbsen 1      auto  auto  --
Eth1/7/2  --      xcvrAbsen 1      auto  auto  --
Eth1/8/1  --      xcvrAbsen 1      auto  auto  --
Eth1/8/2  --      xcvrAbsen 1      auto  auto  --
Eth1/9/1  --      xcvrAbsen 1      auto  auto  --
Eth1/9/2  --      xcvrAbsen 1      auto  auto  --
Eth1/10   --      xcvrAbsen 1      auto  200G  --
Eth1/11   --      connected 1      full  100G  QSFP-100G-LR
Eth1/12   --      xcvrAbsen 1      auto  auto  --
Eth1/13   --      connected 1      full  100G  QSFP-100G-LR
Eth1/14   --      xcvrAbsen 1      auto  400G  --
Eth1/15   --      xcvrAbsen 1      auto  400G  --
Eth1/16/1 --      xcvrAbsen 1      auto  auto  --
Eth1/16/2 --      xcvrAbsen 1      auto  auto  --
Eth1/16/3 --      xcvrAbsen 1      auto  auto  --
Eth1/16/4 --      xcvrAbsen 1      auto  auto  --
N9K-9316D#

```

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

```

N9K-9316D# show interface ethernet 1/11
Ethernet1/11 is up
admin state is up, Dedicated Interface
Hardware: 10000/25000/40000/50000/100000/200000/400000 Ethernet, address: 4c71.0d56.0500 (bia 4c71.0d56.0500)
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 off 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 00:00:23
Last clearing of "show interface" counters never
2 interface resets
Load-Interval #1: 30 seconds
  30 seconds input rate 72 bits/sec, 0 packets/sec
  30 seconds output rate 232 bits/sec, 0 packets/sec
  input rate 72 bps, 0 pps; output rate 232 bps, 0 pps
Load-Interval #2: 5 minute (300 seconds)
  300 seconds input rate 24 bits/sec, 0 packets/sec
  300 seconds output rate 32 bits/sec, 0 packets/sec
  input rate 24 bps, 0 pps; output rate 32 bps, 0 pps
RX
  0 unicast packets  75 multicast packets  0 broadcast packets
  75 input packets  6576 bytes
  0 jumbo packets  0 storm suppression bytes
  0 runs  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  21 multicast packets  0 broadcast packets
  21 output packets  2898 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

```

3. Read the DDM information of the module

```

N9K-9316D# show interface ethernet 1/11 transceiver details
Ethernet1/11
  transceiver is present
  type is QSFP-100G-LR
  name is FS
  part number is QSFP-BX10-100G
  revision is 01
  serial number is A2440002361
  nominal bitrate is 25500 MBit/sec per channel
  Link length supported for 9/125um fiber is 10 km
  cisco id is 17
  cisco extended id number is 220

```

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

```
root@fs1-PowerEdge-R860:~# mlxfwmanager -u
Querying Mellanox devices firmware ...
```

```
Device #2:
-----
```

```
Device Type:    ConnectX7
Part Number:    MCX755106AS-HEA_Ax
Description:    NVIDIA ConnectX-7 HHHH Adapter Card; 200GbE (default mode) / NDR200 IB; Dual-port QSFP112; PCIe 5.0 x16 with x16 PCIe extension option; Cry
PSID:          MT_0000000834
PCI Device Name: /dev/mst/mt4129_pciconf3
Base MAC:      a088c2d55882
Versions:      Current    Available
FW            28.43.1014   N/A
PXE           3.7.0500    N/A
UEFI          14.36.0016   N/A
```

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

5. Read the module basic information on NIC

```
root@fs1-PowerEdge-R860:~#
root@fs1-PowerEdge-R860:~# mlxlink -d mlx5_7 -c -m -e
```

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.) : 0x00003ff2 (200G_2X,200G_4X,100G_1X,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      : 28.43.1014
amBER Version         : 3.6
MFT Version           : mft 4.30.1-113
```

Physical Counters and BER Info

```
-----
Time Since Last Clear [Min] : 2.3
Effective Physical Errors    : 0
Effective Physical BER       : 15E-255
Raw Physical Errors Per Lane : 0,0,0,0
Link Down Counter           : 9
Link Error Recovery Counter  : 0
Raw Physical BER            : 15E-255
```

Module Info

```
-----
Temperature [C]          : 40 [-5..75]
Voltage [mV]             : 3246 [2970..3630]
Bias Current [mA]         : 81,0,0,0 [30..120]
Rx Power Current [dBm]    : 3.098, -40, -40, -40 [-11.249..5.799]
Tx Power Current [dBm]    : 3.164, -40, -40, -40 [-3.904..6.8]
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-BX10-100G
Vendor Serial Number      : A2440002406
Rev                       : 01
Wavelength [nm]          : 1271
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
SNR Media Lanes [dB]     : N/A
SNR Host Lanes [dB]      : N/A
IB Cable Width            : 1x,2x,4x
```

Test Information


```
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     : 6.5nm
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       : 21_02_25
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
```

EYE Opening Info

```
-----
FOM Mode                  : SLRG_FOM_MODE_EYEO
Lane                      : 0, 1, 2, 3
Initial FOM               : 200, 190, 188, 202
Last FOM                  : 201, 194, 190, 195
```

Read the module DDM on NIC

Test Information

```
root@fs1-PowerEdge-R860:~# 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.)  : 0x00003ff2 (200G_2X,200G_4X,100G_1X,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           : 28.43.1014
amBER Version              : 3.6
MFT Version                : mft 4.30.1-113
```

Cable DDM Information

```
-----
Temperature                : 38C
Voltage                    : 3.2520V
Channels                   : Channel 1 ,Channel 2 ,Channel 3 ,Channel 4
RX Power                   : 4.000dBm , -40.000dBm , -40.000dBm , -40.000dBm
TX Power                   : 2.000dBm , -40.000dBm , -40.000dBm , -40.000dBm
TX Bias                    : 90.000mA , 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

```

Channel 1 Flags

```

RX Power Alarm high : 0
RX Power Warning high : 0
RX Power Warning low : 0
RX Power Alarm low : 0

```

```

TX Power Alarm high : 0
TX Power Warning high : 0
TX Power Warning low : 0
TX Power Alarm low : 0

```

```

TX Bias Alarm high : 0
TX Bias Warning high : 0
TX Bias Warning low : 0
TX Bias Alarm low : 0

```

Channel 2 Flags

```

RX Power Alarm high : 0
RX Power Warning high : 0
RX Power Warning low : 0
RX Power Alarm low : 0

```

```

TX Power Alarm high : 0
TX Power Warning high : 0
TX Power Warning low : 0
TX Power Alarm low : 0

```

```

TX Bias Alarm high : 0
TX Bias Warning high : 0
TX Bias Warning low : 0
TX Bias Alarm low : 0

```

Channel 3 Flags

```

RX Power Alarm high : 0
RX Power Warning high : 0
RX Power Warning low : 0
RX Power Alarm low : 0

```

```

TX Power Alarm high : 0
TX Power Warning high : 0
TX Power Warning low : 0
TX Power Alarm low : 0

```

```

TX Bias Alarm high : 0
TX Bias Warning high : 0
TX Bias Warning low : 0
TX Bias Alarm low : 0

```

Channel 4 Flags

```

RX Power Alarm high : 0
RX Power Warning high : 0
RX Power Warning low : 0
RX Power Alarm low : 0

```

```

TX Power Alarm high : 0
TX Power Warning high : 0
TX Power Warning low : 0
TX Power Alarm low : 0

```

```

TX Bias Alarm high : 0
TX Bias Warning high : 0
TX Bias Warning low : 0
TX Bias Alarm low : 0

```

DDM Thresholds

Thresholds	Temperature	Voltage	RX Power	TX Power	TX Bias
High alarm threshold	: 75C	,3.630V	,5.800dBm	,6.800dBm	,120.000mA
High warning threshold	: 70C	,3.465V	,4.800dBm	,5.800dBm	,110.000mA
Low warning threshold	: 0C	,3.135V	, -8.202dBm	, -1.900dBm	,40.030mA
Low alarm threshold	: -5C	,2.970V	, -11.203dBm	, -3.901dBm	,30.000mA

Test Conclusion

After completing the above test content, all the test information should be copied and pasted into a TXT document.

Remarks

/