

QSFP-SR4-40G

TEST REPORT (Cisco)

Content

1. Test Purpose	3
2. Test Result Summary	3
3. Test Equipment Used.....	3
4. Test Data.....	4
4.1 Test Scenario.....	4
4.2 Test Result.....	5

1. Test Purpose

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

2. Test Result Summary

Table 2-1: Test Result Summary

Test Items	Test Result
Muti-Version	Pass
Connectivity	Pass
Module Basic Information	Pass
Digital Diagnostic Monitoring	Pass

3. Test Equipment Used

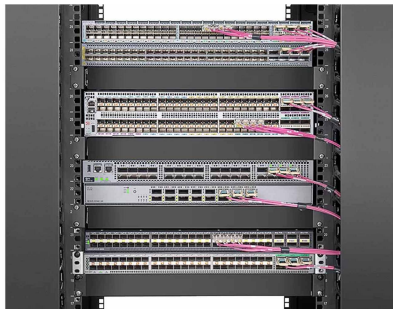
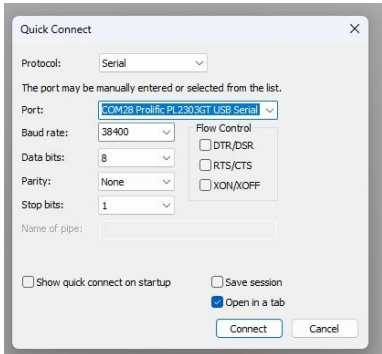
Table 3-1: Test Equipment Used

Vendor	Device	Soft Version/Compatible Brand	Serial Number
Cisco Switch	C9500-24Y4C	17.12.03	/
Intel Network Interface Card (NIC)	E810-CQDA2	/	/
FS Optical Transceiver Module	QSFP-SR4-40G	Cisco Compatible	A1930000922 A1930000921
FS Server	RS7260	/	/

4. Test Data

4.1 Test Scenario

Table 4-1: Test Scenario

Test Topology	Network topology:  Interoperability test scenario : 
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.
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4.2 Test Result

Table 4-2: Test Result

Test Information

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

C9500-24Y4C#show version

Cisco IOS XE Software, Version 17.12.03

Cisco IOS Software [Dublin], Catalyst L3 Switch Software (CAT9K_IOSXE), Version 17.12.3, RELEASE SOFTWARE (fc7)

Technical Support: <http://www.cisco.com/techsupport>

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C9500-24Y4C#show interfaces status

Port	Name	Status	Vlan	Duplex	Speed	Type
Twe1/0/1		notconnect	routed	auto	auto	unknown
Twe1/0/2		notconnect	routed	auto	auto	unknown
Twe1/0/3		notconnect	routed	auto	auto	unknown
Twe1/0/4		notconnect	routed	auto	auto	unknown
Twe1/0/5		notconnect	routed	auto	auto	unknown
Twe1/0/6		notconnect	1	auto	auto	unknown
Twe1/0/7		notconnect	1	auto	auto	unknown
Twe1/0/8		notconnect	1	auto	auto	unknown
Twe1/0/9		notconnect	1	auto	auto	unknown
Twe1/0/10		notconnect	1	auto	auto	unknown
Twe1/0/11		notconnect	1	auto	auto	unknown
Twe1/0/12		notconnect	1	auto	auto	unknown
Twe1/0/13		notconnect	1	auto	auto	unknown
Twe1/0/14		notconnect	1	auto	auto	unknown
Twe1/0/15		notconnect	routed	auto	auto	unknown
Twe1/0/16		notconnect	1	auto	auto	unknown
Twe1/0/17		notconnect	1	auto	auto	unknown
Twe1/0/18		notconnect	1	auto	auto	unknown
Twe1/0/19		notconnect	1	auto	10G	unknown
Twe1/0/20		notconnect	1	auto	auto	unknown
Twe1/0/21		notconnect	routed	auto	auto	unknown

Port	Name	Status	Vlan	Duplex	Speed	Type
Twe1/0/22		notconnect	routed	auto	auto	unknown
Twe1/0/23		notconnect	1	auto	auto	unknown
Twe1/0/24		notconnect	1	auto	auto	unknown
Hu1/0/25		connected	1	full	40G QSFP 40G SR4 SFP	
Hu1/0/26		connected	1	full	40G QSFP 40G SR4 SFP	
Hu1/0/27		notconnect	routed	auto	auto	unknown
Hu1/0/28		notconnect	1	auto	auto	unknown

Test Information	2. Verify the NIC port status <pre>[root@RS5220 ~]# ethtool ens2f0np0 Settings for ens2f0np0: Supported ports: [FIBRE] Supported link modes: 25000baseCR/Full 25000baseSR/Full 50000baseCR2/Full 100000baseSR4/Full 100000baseCR4/Full 100000baseLR4_ER4/Full 50000baseSR2/Full 50000baseSR/Full 50000baseCR/Full 50000baseLR_ER_FR/Full 100000baseSR2/Full 100000baseCR2/Full Supported pause frame use: Symmetric Supports auto-negotiation: No Supported FEC modes: None Advertised link modes: Not reported Advertised pause frame use: No Advertised auto-negotiation: No Advertised FEC modes: None Speed: 10000Mb/s Duplex: Full Auto-negotiation: off Port: FIBRE PHYAD: 0 Transceiver: internal Supports Wake-on: d Wake-on: d Current message level: 0x00000007 (7) drv probe link Link detected: yes [root@RS5220 ~]# ethtool ens2f1np1 Settings for ens2f1np1: Supported ports: [FIBRE] Supported link modes: 25000baseCR/Full 25000baseSR/Full 50000baseCR2/Full 100000baseSR4/Full 100000baseCR4/Full 100000baseLR4_ER4/Full 50000baseSR2/Full 50000baseSR/Full 50000baseCR/Full 50000baseLR_ER_FR/Full 100000baseSR2/Full 100000baseCR2/Full Supported pause frame use: Symmetric Supports auto-negotiation: No Supported FEC modes: None Advertised link modes: Not reported Advertised pause frame use: No Advertised auto-negotiation: No Advertised FEC modes: None Speed: 10000Mb/s Duplex: Full Auto-negotiation: off Port: FIBRE PHYAD: 0 Transceiver: internal Supports Wake-on: d Wake-on: d Current message level: 0x00000007 (7) drv probe link Link detected: yes [root@RS5220 ~]# ethtool -i ens2f0np0</pre>
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Test Information	3. Read the module's basic information from the switch side C9500-24Y4C#show interfaces HundredGigE 1/0/25 transceiver properties Name : Hu1/0/25 Administrative Speed: 40000 Administrative Duplex: full Administrative Auto-MDIX: on Administrative Power Inline: N/A Operational Speed: 40000 Operational Duplex: full Operational Auto-MDIX: on Media Type: QSFP 40G SR4 SFP C9500-24Y4C#show interfaces HundredGigE 1/0/26 transceiver properties Name : Hu1/0/26 Administrative Speed: 40000 Administrative Duplex: full Administrative Auto-MDIX: on Administrative Power Inline: N/A Operational Speed: 40000 Operational Duplex: full Operational Auto-MDIX: on Media Type: QSFP 40G SR4 SFP
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4. Read the module's basic information from the NIC side

```
[root@RS5220 ~]# ethtool -m ens2f0np0
Identifier              : 0x0d (QSFP+)
Extended identifier     : 0xc0
Extended identifier description : 3.5W max. Power consumption
Extended identifier description : No CDR in TX, No CDR in RX
Extended identifier description : High Power Class (> 3.5 W) enabled
Power set               : Off
Power override          : On
Connector               : 0x0c (MPO Parallel Optic)
Transceiver codes       : 0x04 0x00 0x00 0x00 0x00 0x00 0x00 0x00
Transceiver type        : 40G Ethernet: 40G Base-SR4
Encoding                : 0x05 (64B/66B)
BR, Nominal             : 10300Mbps
Rate identifier         : 0x00
Length (SMF,km)         : 0km
Length (OM3 50um)      : 100m
Length (OM2 50um)      : 0m
Length (OM1 62.5um)    : 0m
Length (Copper or Active cable) : 75m
Transmitter technology  : 0x00 (850 nm VCSEL)
Laser wavelength       : 850.000nm
Laser wavelength tolerance : 10.000nm
Vendor name            : FS
Vendor OUI             : 00:1b:21
Vendor PN              : QSFP-SR4-40G
Vendor rev             : A
Vendor SN              : A2207310037
Date code              : 220731
Revision Compliance    : Revision not specified
Tx fault               : None
Module temperature     : 31.86 degrees C / 89.35 degrees F
Module voltage         : 3.2850 V
Alarm/warning flags implemented : Yes
Laser tx bias current (Channel 1) : 6.406 mA
Laser tx bias current (Channel 2) : 6.400 mA
Laser tx bias current (Channel 3) : 6.392 mA
Laser tx bias current (Channel 4) : 6.386 mA
Transmit avg optical power (Channel 1) : 0.8217 mW / -0.85 dBm
Transmit avg optical power (Channel 2) : 0.8142 mW / -0.89 dBm
Transmit avg optical power (Channel 3) : 0.8369 mW / -0.77 dBm
Transmit avg optical power (Channel 4) : 0.8408 mW / -0.75 dBm
Rcvr signal avg optical power(Channel 1) : 1.0890 mW / 0.37 dBm
Rcvr signal avg optical power(Channel 2) : 0.0001 mW / -40.00 dBm
Rcvr signal avg optical power(Channel 3) : 0.0001 mW / -40.00 dBm
Rcvr signal avg optical power(Channel 4) : 0.0001 mW / -40.00 dBm
Laser bias current high alarm (Chan 1) : Off
Laser bias current low alarm (Chan 1) : Off
Laser bias current high warning (Chan 1) : Off
Laser bias current low warning (Chan 1) : Off
Laser bias current high alarm (Chan 2) : Off
Laser bias current low alarm (Chan 2) : Off
Laser bias current high warning (Chan 2) : Off
Laser bias current low warning (Chan 2) : Off
Laser bias current high alarm (Chan 3) : Off
Laser bias current low alarm (Chan 3) : Off
Laser bias current high warning (Chan 3) : Off
Laser bias current low warning (Chan 3) : Off
Laser bias current high alarm (Chan 4) : Off
Laser bias current low alarm (Chan 4) : Off
Laser bias current high warning (Chan 4) : Off
Laser bias current low warning (Chan 4) : Off
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
Laser tx power high alarm (Channel 1) : Off
Laser tx power low alarm (Channel 1) : Off
Laser tx power high warning (Channel 1) : Off
Laser tx power low warning (Channel 1) : Off
Laser tx power high alarm (Channel 2) : Off
Laser tx power low alarm (Channel 2) : Off
Laser tx power high warning (Channel 2) : Off
Laser tx power low warning (Channel 2) : Off
Laser tx power high alarm (Channel 3) : Off
Laser tx power low alarm (Channel 3) : Off
Laser tx power high warning (Channel 3) : Off
Laser tx power low warning (Channel 3) : Off
Laser tx power high alarm (Channel 4) : Off
Laser tx power low alarm (Channel 4) : Off
Laser tx power high warning (Channel 4) : Off
Laser tx power low warning (Channel 4) : Off
Laser rx power high alarm (Channel 1) : Off
Laser rx power low alarm (Channel 1) : On
Laser rx power high warning (Channel 1) : Off
Laser rx power low warning (Channel 1) : On
Laser rx power high alarm (Channel 2) : Off
Laser rx power low alarm (Channel 2) : On
Laser rx power high warning (Channel 2) : Off
Laser rx power low warning (Channel 2) : On
Laser rx power high alarm (Channel 3) : Off
Laser rx power low alarm (Channel 3) : On
```

Test Information

Test Information

```
[root@RS5220 ~]# ethtool -m ens2f1np1
Identifier           : 0x0d (QSFP+)
Extended identifier   : 0xc0
Extended identifier description : 3.5W max. Power consumption
Extended identifier description : No CDR in TX, No CDR in RX
Extended identifier description : High Power Class (> 3.5 W) enabled
Power set            : Off
Power override       : On
Connector            : 0x0c (MPO Parallel Optic)
Transceiver codes     : 0x04 0x00 0x00 0x00 0x00 0x00 0x00 0x00
Transceiver type      : 40G Ethernet: 40G Base-SR4
Encoding              : 0x05 (64B/66B)
BR, Nominal           : 10300Mbps
Rate identifier       : 0x00
Length (SMF,km)       : 0km
Length (OM3 50um)    : 100m
Length (OM2 50um)    : 0m
Length (OM1 62.5um)  : 0m
Length (Copper or Active cable) : 75m
Transmitter technology : 0x00 (850 nm VCSEL)
Laser wavelength     : 850.000nm
Laser wavelength tolerance : 10.000nm
Vendor name           : FS
Vendor OUI            : 00:1b:21
Vendor PN             : QSFP-SR4-40G
Vendor rev            : A
Vendor SN             : A2207310036
Date code             : 220731
Revision Compliance   : Revision not specified
Tx fault              : None
Module temperature    : 32.69 degrees C / 90.84 degrees F
Module voltage        : 3.3390 V
Alarm/warning flags implemented : Yes
Laser tx bias current (Channel 1) : 6.500 mA
Laser tx bias current (Channel 2) : 6.492 mA
Laser tx bias current (Channel 3) : 6.486 mA
Laser tx bias current (Channel 4) : 6.512 mA
Transmit avg optical power (Channel 1) : 0.8511 mW / -0.70 dBm
Transmit avg optical power (Channel 2) : 0.8511 mW / -0.70 dBm
Transmit avg optical power (Channel 3) : 0.8201 mW / -0.86 dBm
Transmit avg optical power (Channel 4) : 0.7961 mW / -0.99 dBm
Rcvr signal avg optical power(Channel 1) : 1.0722 mW / 0.30 dBm
Rcvr signal avg optical power(Channel 2) : 0.0001 mW / -40.00 dBm
Rcvr signal avg optical power(Channel 3) : 0.0001 mW / -40.00 dBm
Rcvr signal avg optical power(Channel 4) : 0.0001 mW / -40.00 dBm
Laser bias current high alarm (Chan 1) : Off
Laser bias current low alarm (Chan 1) : Off
Laser bias current high warning (Chan 1) : Off
Laser bias current low warning (Chan 1) : Off
Laser bias current high alarm (Chan 2) : Off
Laser bias current low alarm (Chan 2) : Off
Laser bias current high warning (Chan 2) : Off
Laser bias current low warning (Chan 2) : Off
Laser bias current high alarm (Chan 3) : Off
Laser bias current low alarm (Chan 3) : Off
Laser bias current high warning (Chan 3) : Off
Laser bias current low warning (Chan 3) : Off
Laser bias current high alarm (Chan 4) : Off
Laser bias current low alarm (Chan 4) : Off
Laser bias current high warning (Chan 4) : Off
Laser bias current low warning (Chan 4) : Off
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
Laser tx power high alarm (Channel 1) : Off
Laser tx power low alarm (Channel 1) : Off
Laser tx power high warning (Channel 1) : Off
Laser tx power low warning (Channel 1) : Off
Laser tx power high alarm (Channel 2) : Off
Laser tx power low alarm (Channel 2) : Off
Laser tx power high warning (Channel 2) : Off
Laser tx power low warning (Channel 2) : Off
Laser tx power high alarm (Channel 3) : Off
Laser tx power low alarm (Channel 3) : Off
Laser tx power high warning (Channel 3) : Off
Laser tx power low warning (Channel 3) : Off
Laser tx power high alarm (Channel 4) : Off
Laser tx power low alarm (Channel 4) : Off
Laser tx power high warning (Channel 4) : Off
Laser tx power low warning (Channel 4) : Off
Laser rx power high alarm (Channel 1) : Off
Laser rx power low alarm (Channel 1) : Off
Laser rx power high warning (Channel 1) : Off
Laser rx power low warning (Channel 1) : Off
Laser rx power high alarm (Channel 2) : Off
Laser rx power low alarm (Channel 2) : On
Laser rx power high warning (Channel 2) : Off
Laser rx power low warning (Channel 2) : On
Laser rx power high alarm (Channel 3) : Off
Laser rx power low alarm (Channel 3) : On
Laser rx power high warning (Channel 3) : Off
Laser rx power low warning (Channel 3) : On
```

5. Read the DDM information of the module

C9500-24Y4C#show interfaces HundredGigE 1/0/25 transceiver detail
ITU Channel not available (Wavelength not available),
Transceiver is internally calibrated.
mA: milliamperes, dBm: decibels (milliwatts), NA or N/A: not applicable.
++ : high alarm, + : high warning, - : low warning, -- : low alarm.
A2D readouts (if they differ), are reported in parentheses.
The threshold values are calibrated.

Port	Temperature (Celsius)	High Alarm High Warn Low Warn Low Alarm Threshold Threshold Threshold Threshold (Celsius) (Celsius) (Celsius) (Celsius)			
Hu1/0/25	34.6	75.0	70.0	0.0	-5.0

Port	Voltage (Volts)	High Alarm High Warn Low Warn Low Alarm Threshold Threshold Threshold Threshold (Volts) (Volts) (Volts) (Volts)			
Hu1/0/25	3.37	3.63	3.46	3.13	2.97

Port	Lane	Current (milliamperes)	High Alarm High Warn Low Warn Low Alarm Threshold Threshold Threshold Threshold (mA) (mA) (mA) (mA)			
Hu1/0/25	1	6.4	13.0	12.0	1.0	0.5
Hu1/0/25	2	6.4	13.0	12.0	1.0	0.5
Hu1/0/25	3	6.5	13.0	12.0	1.0	0.5
Hu1/0/25	4	6.5	13.0	12.0	1.0	0.5

Port	Lane	Optical Transmit Power (dBm)	High Alarm High Warn Low Warn Low Alarm Threshold Threshold Threshold Threshold (dBm) (dBm) (dBm) (dBm)			
Hu1/0/25	1	-0.7	3.0	2.0	-7.5	-9.5
Hu1/0/25	2	-0.7	3.0	2.0	-7.5	-9.5
Hu1/0/25	3	-0.8	3.0	2.0	-7.5	-9.5
Hu1/0/25	4	-0.9	3.0	2.0	-7.5	-9.5

Port	Lane	Optical Receive Power (dBm)	High Alarm High Warn Low Warn Low Alarm Threshold Threshold Threshold Threshold (dBm) (dBm) (dBm) (dBm)			
Hu1/0/25	1	0.1	3.4	2.4	-11.1	-14.1
Hu1/0/25	2	0.5	3.4	2.4	-11.1	-14.1
Hu1/0/25	3	0.5	3.4	2.4	-11.1	-14.1
Hu1/0/25	4	0.6	3.4	2.4	-11.1	-14.1

Test
Information

C9500-24Y4C#show interfaces HundredGigE 1/0/26 transceiver detail
ITU Channel not available (Wavelength not available),
Transceiver is internally calibrated.
mA: milliamperes, dBm: decibels (milliwatts), NA or N/A: not applicable.
++ : high alarm, + : high warning, - : low warning, -- : low alarm.
A2D readouts (if they differ), are reported in parentheses.
The threshold values are calibrated.

Port	Temperature (Celsius)	High Alarm High Warn Low Warn Low Alarm Threshold Threshold Threshold Threshold (Celsius) (Celsius) (Celsius) (Celsius)			
Hu1/0/26	34.6	75.0	70.0	0.0	-5.0

Port	Voltage (Volts)	High Alarm High Warn Low Warn Low Alarm Threshold Threshold Threshold Threshold (Volts) (Volts) (Volts) (Volts)			
Hu1/0/26	3.31	3.63	3.46	3.13	2.97

Port	Lane	Current (milliamperes)	High Alarm High Warn Low Warn Low Alarm Threshold Threshold Threshold Threshold (mA) (mA) (mA) (mA)			
Hu1/0/26	1	6.4	13.0	12.0	1.0	0.5
Hu1/0/26	2	6.4	13.0	12.0	1.0	0.5
Hu1/0/26	3	6.3	13.0	12.0	1.0	0.5
Hu1/0/26	4	6.3	13.0	12.0	1.0	0.5

Port	Lane	Optical Transmit Power (dBm)	High Alarm High Warn Low Warn Low Alarm Threshold Threshold Threshold Threshold (dBm) (dBm) (dBm) (dBm)			
Hu1/0/26	1	-0.8	3.0	2.0	-7.5	-9.5
Hu1/0/26	2	-0.8	3.0	2.0	-7.5	-9.5
Hu1/0/26	3	-0.7	3.0	2.0	-7.5	-9.5
Hu1/0/26	4	-0.7	3.0	2.0	-7.5	-9.5

Port	Lane	Optical Receive Power (dBm)	High Alarm High Warn Low Warn Low Alarm Threshold Threshold Threshold Threshold (dBm) (dBm) (dBm) (dBm)			
Hu1/0/26	1	0.8	3.4	2.4	-11.1	-14.1
Hu1/0/26	2	0.8	3.4	2.4	-11.1	-14.1
Hu1/0/26	3	0.4	3.4	2.4	-11.1	-14.1
Hu1/0/26	4	0.6	3.4	2.4	-11.1	-14.1

C9500-24Y4C#show idprom interface HundredGigE 1/0/25 detail

IDPRM for transceiver HundredGigE1/0/25:

Test Conclusion

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

Remarks