

How to read the SFP optical module



Overview

To test transmitted power in sfp optical modules, you use an optical power meter to get exact results.

Key Takeaways

SFP modules store both static identification and real-time diagnostic data, which can be read via EEPROM or network commands to verify compatibility and monitor performance. Understanding SFP EEPROM Data

Every SFP module contains a small EEPROM that holds two main types of information :

- Serial-ID / Base EEPROM (A0h / 0xA0): This includes the module identifier, connector type, vendor name (bytes 20-35), vendor OUI, part number, and revision. It is typically 96-128 bytes depending on the form factor.
- Digital Diagnostic Monitoring (DDM/DOM, A2h / 0xA2): If supported, this page provides real-time measurements such as temperature, supply voltage, laser bias current, transmit (TX) power, and receive (RX) power, along with alarm and warning thresholds. For QSFP or QSFP28 modules, the memory map is a superset of SFP, with multiple pages and expanded telemetry for higher-speed lanes.

Checking SFP Modules on Linux

On Linux systems, you can use commands like ethtool to read SFP information from network cards :

ethtool -m

Replace with your network interface name (e.g., eth0, p4p1). This command can display:

- Module type and identifier
- Connector type (LC, SC, etc.)
- Transceiver type and encoding
- Nominal bitrate and supported distances
- Vendor name, part number, and revision
- Real-time diagnostics if DDM is supported You can also check link status and speed using:

ethtool Checking SFP Modules on Cisco Switches

Cisco devices provide CLI commands to view SFP details and diagnostics :

- show inventory — lists all installed hardware with Product ID (PID), Version ID (VID), and serial number.
- show interface transceiver detail — displays full DDM metrics including temperature, voltage, TX/RX power, and vendor information.
- show interfaces status — shows port status, speed, duplex, and media type. These commands help verify correct installation, detect optical problems, and monitor module health.

Practical Tips

- Always verify that the SFP module is compatible with your switch or network card before installation.
- Use DDM readings to monitor for overheating, low optical power, or voltage issues.
- For troubleshooting, compare the module's EEPROM data with the expected vendor and part number to detect mismatched or unsupported optics.
- Periodically check SFP health to prevent unexpected link drops and maintain network stability. By combining EEPROM reading, Linux commands, or switch CLI diagnostics, you can fully monitor and manage SFP optical modules for reliable network operation.

Article Content

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To test transmitted power in sfp optical modules, you use an optical power meter to get exact results. Many sfp

Understanding Fiber Optics – Your Quick Guide to SFP Transceivers

Understanding Fiber Optics – Your Quick Guide to SFP Transceivers What is an SFP Transceiver? SFP (small form-factor

16 Tips to Troubleshoot Your Optical Transceiver Issues

For SFP optical modules with a digital interface (DDM), you can use the DDM function of your equipment to monitor the

SFP Transceivers Explained

SFP stands for “small form-factor pluggable” and transceiver means a device that can both transmit and receive data.

How to Measure Power Level of SFP Transceiver Modules?

Then, connect the optical transceiver to the optical power meter using LC-FC single mode fiber patch cables. Finally,

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Learn how to monitor SFP optical power on Cisco switches, interpret Tx/Rx levels, and troubleshoot fiber link issues. Step-by-step

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How to Test An SFP Transceiver Fiber optical modules are extremely important in today's optical fiber communication

SFP Troubleshooting: Fix No Link, Detection and Fiber Issues

What Is SFP Troubleshooting? SFP troubleshooting refers to the process of diagnosing and resolving issues related

How To View Optical Transceiver Information On Network

Optical transceivers can be used on switches, routers and network adapters (fiber network cards). Special commands

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