Huawei optical module jitter parameters

Overview

The following uses the Moduletek SFP-10G-LR module connected to a Huawei S6700 switch as an example to introduce how to read information of the connected optical module on a Huawei switch.

Key Takeaways

Jitter in Huawei optical modules refers to the timing variations of the transmitted signal, typically measured as RMS or peak-to-peak values, and is a key indicator of signal integrity.

Understanding Jitter in Optical Modules

Jitter represents the deviation in the timing of signal edges from their ideal positions. In optical modules, excessive jitter can lead to bit errors, degraded link performance, and reduced transmission distance. Huawei optical modules, like other SFP, SFP+, and QSFP modules, specify jitter in their datasheets, often in terms of: Random Jitter (RJ): Short-term, unpredictable timing variations.

Deterministic Jitter (DJ): Predictable, repeatable timing variations caused by system components. Total Jitter (TJ): Combination of RJ and DJ, usually measured at a specified bit error rate (BER), e.g., 10^-12. Monitoring Jitter on Huawei DevicesWhile Huawei switches do not directly display jitter in standard DDM outputs, you can monitor related signal quality parameters that affect jitter: Transmit Power (TX Power) and Receive Power (RX Power): Low or fluctuating optical power can increase jitter.

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Bias Current: Variations in laser bias current can affect signal rise/fall times, indirectly influencing jitter. Temperature and Voltage: Environmental changes can impact module performance and jitter. To check these parameters on a Huawei switch: Run the command: display transceiver interface verbose This provides DDM data including TX/RX power, bias current, voltage, and temperature.

Compare the measured values against the module's datasheet specifications to infer jitter performance.

Typical Jitter Specifications

For Huawei 10GBASE-LR or 25G/100G modules: RMS Jitter: Usually ≤ 0. 1 UI (Unit Interval) for 10G modules.

Peak-to-

Peak Jitter: Typically ≤ 0. 3 UI. Compliance: Modules conform to IEEE 802.

3 standards, ensuring jitter remains within acceptable limits for reliable transmission.

Best Practices

Ensure optical power levels are within the recommended range to minimize jitter. Maintain proper temperature and voltage conditions. Use high-quality fiber (single-mode or multimode as supported) to reduce dispersion-induced jitter.

For precise jitter measurement, use an optical oscilloscope or BER tester, as DDM alone does not provide direct jitter readings. By monitoring DDM parameters and adhering to module specifications, you can effectively manage and infer jitter performance in Huawei optical modules.

Article Content

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The following uses the Moduletek SFP-10G-LR module connected to a Huawei S6700 switch as an example to introduce how to read information of the connected optical module on a Huawei switch.

How to View Optical Module Parameters

If an optical module is installed in a running device, you can run the display transceiver command to view parameters of the optical module, including the center wavelength, transmission distance, fiber

OPTICAL MODULES FOR HUAWEI S SERIES SWITCHES

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A switch must use optical or copper modules that have been certified for use on Huawei switches. Non-certified optical or copper modules cannot ensure transmission reliability and may affect service

100G/400G Optical Transceiver Platform Specification & Architectural ...

PRODUCT IDENTIFICATIONThis document serves as the definitive technical reference for the 100G/400G Optical Transceiver Family, a comprehensive suite of pluggable ...

Limiting output jitter in optical PMDs

Limiting output jitter in optical PMDs Adee Ran, Cisco Background • Jitter is a key parameter in our specifications • Receiver/input jitter tolerance is specified for most PMDs and all AUIs

01-10 OPTICAL MODULES

If an optical module is installed in a running device, you can run the display transceiver command to view parameters of the optical module, including the center wavelength, transmission distance, fiber

How To View Optical Transceiver Information On Huawei Switches

Optical transceivers are widely applied in switches, network cards, routers and other communication devices. Checking transceiver parameters allows users to monitor real-time

Introduction To Key Parameters Of Optical Module Eye Diagrams

The unit of jitter is ps (picoseconds). The jitter observed in the eye diagram can qualitatively reflect the magnitude of signal jitter: the smaller the jitter, the better the signal quality.

Limiting output jitter in optical PMDs

• Optical Jitter can be independent of the AUI jitter • Jitter from the optical output is expected to be tolerated by the receiving module • But some of that jitter will be tracked and forwarded to the host on

Optical Module: Typical Optical Module Troubleshooting Procedure

Optical Module: Typical Optical Module Troubleshooting Procedure Check the model of the faulty optical module. If it is not a Huawei-certified optical module, replace it with a Huawei-certified optical module.

How to View Optical Module Parameters

If you know the model or type of an optical module, you can view the section "Pluggable Modules for Interfaces" in the Hardware Description to look up parameters of the optical module, including the

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How Do I Ensure that the Transmit and Receive Optical Power of an ...

The diagnostic information of the optical module displays the current transmit and receive optical power values, as well as the default maximum and minimum power values. If the receive

Optical Module

Optical Performance Optical Communication Technologies Optical Components Optical Power Management Ultra-High Speed Transmission Electrical-layer Technology Protection Basis

Checking the Optical Module

Procedure Check whether the firewall supports the optical module based on the model of the optical module inserted into the interface and hardware description in the product documentation. The

Optical Interface Interconnection Is Abnormal on CE Switches ...

Procedure Check whether the optical module models at the two ends match. Run the display interface interface-type interface-number transceiver verbose command to check optical

Checking Whether the Optical Module Works Properly

Procedure Run the display transceiver interface interface-type interface-number verbose command to view optical module information. Check whether the local and remote optical modules work properly.

Guide to Using Optical Modules

This document provides an overall description of the CE6800&8800&9800 series switches hardware that V300R020C00 and later versions, helping you obtain detailed information about each chassis, power

Introduction of Optical Modules on Huawei Switches

Check Optical Module Parameters: If an optical module is installed in a running switch, you can run the display transceiver command to view parameters of the optical module, including the center

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