

Test Report on the New Pluggable Optical Module



Overview

This white paper reports on the performance evaluation of 400ZR and OpenZR+ pluggable modules in a multi-vendor interoperability environment, conducted during the OIF OFC 2023, OIF ECOC 2023, and OIF OFC 2024 Plugfest. ABSTRACT: The Optical Internetworking Forum (OIF) has been instrumental in standardizing coherent optics at the physical layer, with the 400ZR implementation agreement (IA) being a significant achievement. 6Tbps optical pluggable modules, it is limited to 32 modules per Rack Unit (RU), typically requiring 2 RUs to achieve 102.8Tbps of switching. Are pluggable optics dead or alive for the AI era?

Are pluggables relevant in the AI era?

Majority of the switch ports in AI back-end Networks to be 800 Gbps in 2025 and 1600 Gbps in 2027, showing a very fast migration to the highest speeds available in the market. These challenges are forcing the OSFP MSA to introduce OSFP1600 and OSFP-XD to the industry. The OSFP-XD solution has attracted significant interest in. It has been closed engineered systems which are vendor specific. Recently pluggable coherent modules designed against MSAs and other standards have led to the emergence of a coherent pluggable optics ecosystem. It works on a ZR PMD for 80 km link budget for 100G and 400G links using DWDM. The need to manage large amounts of data quickly and efficiently is boosting the demand for high-speed data transfer in data centers.

Article Content

XPO: Redefining Pluggable Optics for AI Networking

This paper outlines the new requirements imposed by this AI-driven transformation and introduces a purpose-built optical architecture designed to meet these challenges.

Pluggable Coherent Optical Module Future-Proofing Growth: Strategic ...

This report offers a comprehensive market overview, providing detailed insights into market size, growth drivers, challenges, and emerging trends in the pluggable coherent optical

Linear Pluggable Optics - An Overview

Comparison to CPO g the need for a standalone module. Although CPO is becoming increasingly popular, LPO is seen as a natural evolutionary path for pluggables, offering lower risk compared to

VIAMI Solutions White Paper Testing pluggable coherent optics

Testing pluggable coherent optics Coherent optics for DWDM transport have been used for some time but these have typically been closed engineered systems which are vendor specific. Recently

Riding the 800G network tsunami with pluggable optical

However, the management of a coherent pluggable module is extremely complex. These new technologies introduce a paradigm shift that requires

Co-packaged Optics Market 2026-2034 Analysis:

Co-packaged Optics Market Company Market Share This comprehensive report, spanning a Historical Period of 2019-2024 and a Forecast Period of 2025-2033,

Sivers and Jabil team up on 1.6T optical transceivers for AI data c...

Swedish Sivers Semiconductors has entered a collaboration with Jabil, one of the world's largest EMS providers, to develop an energy-efficient 1.6T pluggable optical transceiver module

Inside the coherent pluggable flywheel

AI connectivity has a new currency. It's coherent pluggable optics "We're really now in a pluggable coherent world," said Andrew Schmitt, founder and directing analyst at Signal AI, as he

Co-Packaged Optics Market Report 2026-2036: Product

Testing strategies for wafer-level and package-level optical validation Standardisation efforts and interoperability considerations Key Questions Answered What is the total addressable

Evolutionary trends in pluggable optical modules

Pluggable optical modules with integrated link processing can significantly reduce port costs for system OEMs and simultaneously enhance line-card port

OSFP1600_and_OSFP-XD

3D views of the OSFP-XD solutions To accommodate both high-power optical and dense copper solutions, the specification will define separate but compatible heatsink specifications for both optical

2026 OFC Showcase

800G Optics, Multi-Rail Systems & Supply Chain Planning Bill Gartner, SVP & GM, Optical Systems and Optical Business Unit at Cisco Systems, presents the company's optical innovations at OFC,

BRKOPT-2556

Multi-Haul Performance Optimized Industry's first pluggable coherent module (100G CFP) 100G/200G CFP2-DCO 400G pluggable portfolio 800ZR/ZR+ and 400ULH in QSFPDD, OSFP and pluggables -

Session PDF

Pluggable coherent - Enabling efficient network architectures Density is improving many folds; power per bit coming down dramatically* *Source: Signal AI in PONC 2023

Partnering With Lumentum and Coherent, Can Nvidia's

TradingKey - On Monday, March 2 local time, NVIDIA (NVDA) announced that it has entered into a deep strategic partnership with optical

Marvell Extends ZR/ZR+ Leadership with Industry-first

Marvell introduces the industry's first 1.6T ZR/ZR+ pluggable powered by a 2nm coherent DSP, along with a new 800G ZR/ZR+ DSP enabling next-gen

Testing Strategies for Next-Generation Optical Interconnects: Co ...

W H I T E P A P E R This paper discusses industry trends in Integrated Photonics and how market participants are adapting to test and mass produce next-generation optical interconnects in a cost

Evaluating Co-Packaged Optics (CPO) Performance

Since conventional pluggable optical transceivers use four to eight lanes, the large increase in the number of CPO lanes causes new challenges. The test methods in this case are either parallel

Co-packaged optics deployments will start in 2026, says

However, Signal AI cautioned in its latest Active Insight report that large-scale CPO deployment is not expected for three to five years, but some

Pluggable Module

The optical modules, pluggable or fixed, can also use dense wavelength-division multiplexing to enable Layer 4 metro and long-haul distances. Such optical connections have become an early and obvious

Optical Module Package Market 2025

Report Scope This market research report provides a comprehensive analysis of the global and regional Optical Module Package markets, covering the forecast period 2025–2032. It offers detailed insights

Silicon Photonics in Pluggable Optics White Paper

Silicon photonics technology has long been of interest in the optical networking industry and in recent years has gained a major foothold in the data center network. This technology is increasingly used

400G, 800G, and Terabit Pluggable Optics:

Are pluggable optics dead or alive for the AI era? Are pluggables relevant in the AI era? Majority of the switch ports in AI back-end Networks to be 800 Gbps in 2025 and 1600 Gbps in 2027, showing a

Silicon Photonics in Pluggable Optics White Paper

Example of a silicon photonics based 100-Gbps optical module Benefits of silicon photonics Manufacturing efficiency and automation Reduction

Next generation Co-Packaged Optics Technology to Train & Run

A co-packaged optic module design was developed to support electronic and optics compatibility, industry standards where applicable and scaling for design, process, assembly, test, pluggable

VIAVI Solutions White Paper Testing pluggable coherent optics

This VIAVI white papers serves as an introduction to pluggable coherent optics and the testing and validation challenges and methodology required to successfully develop, validate and deploy

OSFP1600_and_OSFP-XD

A reference 1U system with 32 OSFP-XD ports was analyzed using airflow simulation tools for both 40W optical modules and 20W active electrical copper cables. As shown below, the OSFP-XD provides

Over 800G optical transceiver shipments to soar 2.6× by 2026

The report predicts that worldwide shipments of optical transceivers of 800G and higher will hit 24 million units in 2025, then jump by 2.6 times to nearly 63 million units in 2026.

OFC 2025 400ZR White Paper 4_17

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Co-Packaged Optics: Redefining • Santec Holdings

Explore co-packaged optics, how they work, and why precision testing from Santec is key to their deployment in data centers and AI infrastructure.

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