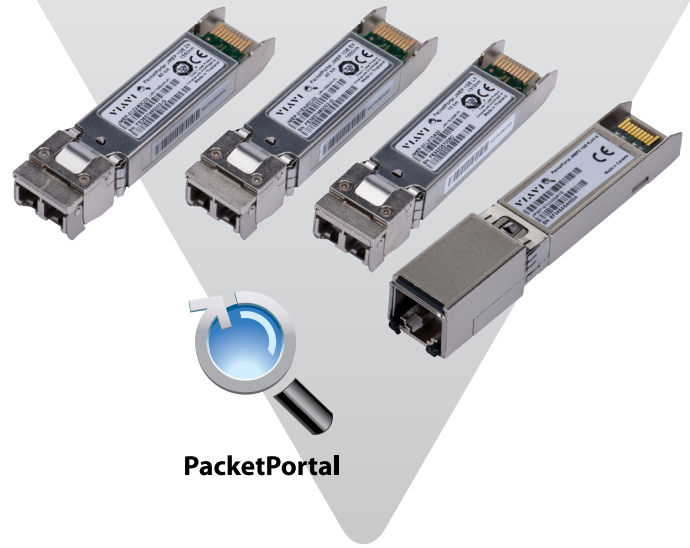


PacketPortal[®] Micro Ethernet Probe (JMEP)

Gigabit Ethernet transceivers for test, turn up, and performance monitoring



The PacketPortal JMEP smart SFP is a state-of-the-art 1 Gigabit Ethernet smart SFP transceiver that reduces the need for additional network instrumentation. JMEP transceivers seamlessly deploy inline into existing network devices. They provide network operators and service providers with remote points of testability that enable performance-assured service delivery and increase the value of existing network infrastructure.

Second-generation JMEP2 devices provide additional test and monitoring features at the remote end. They can also simulate multiple simultaneous loads on the network through Y.1564 traffic generation, and micro-burst monitoring for throughput as a function of time-of-day with resolution to 1 msec.

The JMEP smart SFP includes full PCS and MAC layer implementations in each direction, allowing rate compensation for synchronous Ethernet end points.

Carrier Ethernet QoS Enabler

JMEP transceivers enable more efficient testing and troubleshooting by leveraging RFC 2544 and Y.1564 as well as Y.1731 and RFC 5357 methodologies to support end-to-end performance monitoring in multiservice/multi-class-of-service environments. It measures KPIs such as network delay, jitter, and packet loss to guarantee that SLAs are met. The probe also supports key service operations and maintenance capabilities, letting service providers easily verify service continuity and isolate faults.

Benefits

- Simple to use, easy to deploy in existing network SFP ports
- Turns network ports into service-assurance tools, enabling Ethernet operation, administration, and maintenance (OAM) for any 1 Gigabit Ethernet network
- Simplifies test and troubleshooting procedures to reduce equipment upgrades, truck rolls, and mean time to repair (MTTR)
- Compatible with the award-winning Viavi T-BERD[®]/MTS test portfolio and the EtherASSURE[™] centralized test solution
- Monitors across mobile-backhaul networks without additional instrumentation

Features

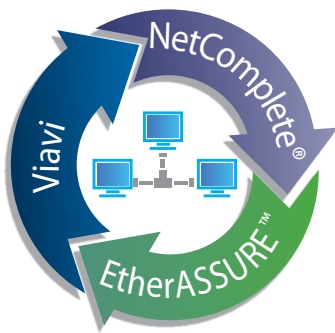
- Fully compatible with RFC 2544 and Y.1564 test methodologies
- Activates test loopbacks (L2/L3)
- Monitors inline performance using Y.1731/TWAMP-Light (RFC 5357)
- Measures throughput, availability, frame loss, frame delay, and frame delay variation
- Enables OAM 802.1ag for fault isolation

Applications

- Service activation and assurance for Ethernet mobile backhaul for 3G, 4G, LTE, and small cells
- Ethernet business-services SLA verification and assurance
- Synchronous Ethernet (SyncE) end points

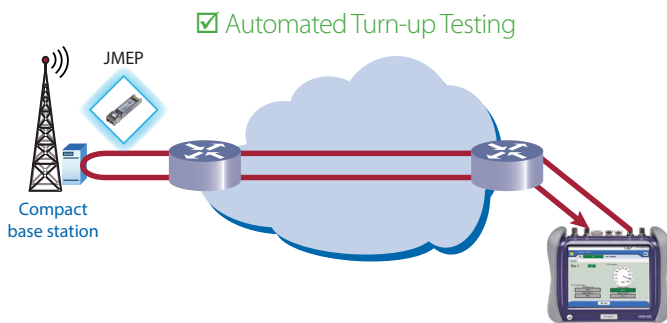
Supporting industry standards, JMEP transceivers are based on decades of Viavi optical technology and communications test and measurement expertise.

JMEP transceivers are a key enabler of the Viavi EtherASSURE Ethernet assurance platform. EtherASSURE provides a more efficient test and troubleshooting process by leveraging RFC 2544 and Y.1564 methodologies and one-button automated testing with centralized performance reporting. It also supports Y.1731/TWAMP-Light (RFC 5357) functionality on multiple services concurrently. The Viavi Small Cell Assurance Solution also leverages JMEP to deliver unmatched capabilities that help mobile service providers overcome the rollout and assurance challenges associated with small-cell deployments.



JMEP Service Activation Test Features

- Activates Layer 2 and Layer 3 loopbacks on any port
- Supports per-port or per-EVC loopbacks
- Automatically discovered from the T-BERD/MTS Ethernet test portfolio and the QT-600 test head
- Complies with RFC 2544 and Y.1564 test methodologies; provides additional capabilities beyond the standard



Performance Monitoring Features

- Inline performance monitoring
- Standards-based connectivity fault management (802.1ag) and performance monitoring (Y.1731, RFC 5357)
- Up-and-down maintenance end point (MEP) configuration
- Support for Y.1731 reflector and initiator modes on up to 10 Ethernet virtual connections (EVCs)
- Performance monitoring on up to 10 services
- Supports a TWAMP-Light reflector (RFC 5357) on multiple services/QoS concurrently
- Throughput, frame loss, frame delay, and frame delay variation measurements



JMEP hot-pluggable transceivers drop in to standards-compliant SFP ports and provide a high-speed serial links at up to 1.25 Gbps signaling rates. They are compatible with the INF-8074i (small form factor pluggable transceiver) standard. An embedded PacketPortal packet engine performs Ethernet operations, administration, and maintenance (OAM) functions based on industry standards (802.1ag and Y.1731) including test turn-up automation, enhanced CPE demarcation, and performance monitoring.

The block diagram in Figure 1 depicts JMEP architecture. Each direction has a unique MAC address. The network can address commands directly to the MAC for test and turn-up after which the probe can continue to operate with its own MAC or can assume the MAC address of the device to which it is connected, for example an eNodeB. With full MAC and PCS layer implementation, the JMEP performs rate adaptation as defined by IEEE802.3. For synchronous Ethernet (SyncE) applications, the JMEP can retime the data link to the network using the recovered network clock. This feature provides operators with the option to upgrade any SFP port to a SyncE compatible port.

Optical JMEP transceivers consist of an optical assembly housing the transmitter and receiver and an electrical sub-assembly. All are packaged together with a top metal cover and bottom shield. The optical sub-assembly consists of a high-performance transmitter equipped with a laser drive and a Fabry-Perot laser while the receiver has an InGaAs PIN and a preamplifier.

Copper JMEP transceivers are compatible with Gigabit Ethernet and 1000BASE-T standards as specified in IEEE Std 802.3. It operates on standard Category 5 shielded/unshielded twisted-pair copper cabling of link lengths up to 100 m (328 ft). The compact RJ-45 connector offers shielding clips and can be optionally used with Category 5 shielded cable for increased EMI protection as required.

All JMEP transceivers support standard digital diagnostic monitoring interfaces using a two-wire serial ID interface as defined in SFP MSA specification SFF-8472. Users can monitor transceiver parameters including temperature, voltage, laser bias current, laser power, and receiver power. Alarms and warnings are provided when monitored parameters exceed predefined threshold values. JMEP transceivers also include a loss-of-signal-detect circuit, which provides a TTL logic high output when it detects an unusable input optical signal level.

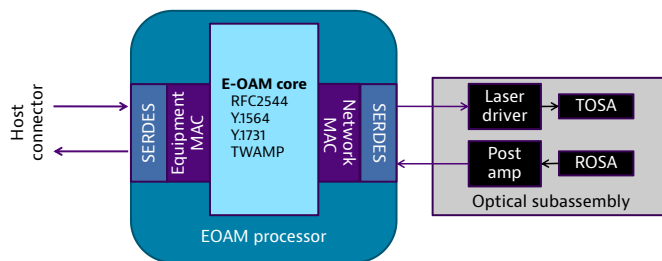


Figure 1. Optical JMEP simplified block diagram



Contact Us **+1 844 GO VIAVI**
(+1 844 468 4284)

To reach the Viavi office nearest you,
visit viavisolutions.com/contacts.

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