Huawei H901GPHF Interface Board Interworking Tolerances with Third-Party ONUs - Official Technical Overview & Hardware Datasheet

PRODUCT IDENTIFICATION

The Huawei H901GPHF is a high-density GPON Optical Line Terminal (OLT) interface board designed for the industry-leading SmartAX MA5800 series multi-service access platform. This advanced line card is engineered to deliver carrier-grade GPON access services, providing a critical bridge between the core network and the last-mile fiber infrastructure. A defining characteristic of the H901GPHF is its rigorously validated interworking tolerance with a broad ecosystem of third-party Optical Network Units (ONUs), ensuring service providers can deploy best-of-breed CPE without being locked into a single vendor, thereby optimizing procurement costs while maintaining uncompromised network performance and reliability.



CORE INTERNAL TOPOLOGY

The H901GPHF architecture is built around a high-performance GPON Media Access Control (MAC) chipset and a powerful network processor. The board interfaces with the MA5800 system backplane via a high-speed 10GE/25GE uplink bus, ensuring non-blocking data flow between the PON ports and the upstream switching fabric. Each of the board's 16 GPON ports integrates a Class B+/C+ optical transceiver, supporting a 1:128 optical split ratio. The hardware design incorporates a dedicated Forwarding Information Base (FIB) and a robust buffering mechanism to handle the bursty nature of GPON upstream traffic. The internal topology is further enhanced with hardware-based encryption engines for AES-128 downstream encryption and sophisticated Dynamic Bandwidth Assignment (DBA) accelerators to manage latency and jitter in real-time.

SWITCHING SUBSYSTEM CAPABILITIES

The switching subsystem of the H901GPHF is designed for maximum throughput and service flexibility. It supports a total switching capacity of up to 40 Gbps per board, enabling line-rate forwarding for all 16 GPON ports. The board excels in interworking scenarios, implementing a flexible OMCI (ONU Management and Control Interface) protocol stack that can be dynamically adapted to interpret and manage the unique MIB (Management Information Base) structures of various third-party ONUs. Key capabilities include:

- Seamless authentication and ranging of ONUs from major silicon vendors.
- Support for advanced traffic management features including 8 queues per port with Weighted Random Early Detection (WRED) and Strict Priority (SP) / Weighted Fair Queuing (WFQ) scheduling.
- Hardware-assisted IPv4/IPv6 dual-stack forwarding and VLAN (802.1Q, 802.1ad) termination.

OPERATIONAL ADVANTAGES

The primary operational advantage of the H901GPHF is its extensive compatibility matrix, validated through rigorous interoperability testing with leading third-party ONU manufacturers. This allows operators to:

- Reduce capital expenditure (CAPEX) by sourcing cost-effective CPE from multiple vendors.

- Mitigate supply chain risks by ensuring flexibility in component sourcing.

- Simplify network management via a unified interface that abstracts vendor-specific nuances, leveraging the Huawei OLT's management system.

- Ensure a smooth migration path for networks upgrading from older GPON or EPON systems.

SPECIFICATION MATRIX

- Port Configuration: 16 x GPON ports (SFP interface)

- Optical Standard: ITU-T G.984.2 (Class B+/C+)

- Max Split Ratio: 1:128

- Forwarding Capacity: 40 Gbps

- Packet Buffer: 2 GB

- MAC Address Table: 16K entries

- VLAN ID Range: 1-4094

- QoS Queues: 8 queues per port

- Encryption: AES-128

- Power Consumption: ≤ 150 W

- Operating Temperature: -10°C to +55°C

- Dimensions (H x W x D): 40 x 220 x 290 mm

Parameter	Specification
Form Factor	Line Card for SmartAX MA5800 Series
PON Ports	16 x GPON SFP (Class B+/C+)
Forwarding Capacity	40 Gbps
Power Supply	via MA5800 Chassis Backplane
Operating Temperature	-10°C to +55°C
MTBF	> 250,000 hours

REGULATORY COMPLIANCE

The H901GPHF is certified to meet the highest industry standards for telecommunications equipment. It fully complies with the ITU-T G.984 series of recommendations, ensuring global interoperability. The board adheres to EMC standards such as EN 300 386 and safety standards like IEC 60950-1/UL 60950-1. It also meets the rigorous environmental requirements of RoHS and WEEE directives, confirming Huawei's commitment to sustainable and eco-friendly design practices.

