Huawei H901GPHF 16-Port GPON Interface Card Pin Definitions and Laser Specs - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

The Huawei H901GPHF is a high-performance, 16-port GPON (Gigabit-capable Passive Optical Network) Optical Line Terminal (OLT) interface card, meticulously engineered for deployment within the Huawei SmartAX MA5800 series Multi-service Access Platforms. This datasheet provides an authoritative technical overview of the H901GPHF, focusing on its hardware architecture, critical pin definitions, and the comprehensive laser specifications of its integral Class C+ optical transceivers. Designed to address the demands of carrier-grade FTTH (Fiber to the Home), FTTB, and FTTC deployments, the H901GPHF delivers a robust 40 Gbit/s forwarding capability and supports up to 2048 subscribers per board, ensuring a future-proof foundation for triple-play and high-speed broadband services .



HARDWARE ARCHITECTURE & SILICON

The H901GPHF is engineered as a modular service board, designed for hot-swappable installation into designated service slots within the MA5800-X2, X7, X15, and X17 chassis. The board's architecture integrates a high-capacity switching module that aggregates and forwards traffic from its 16 GPON SFP ports, managing a system-level forwarding capability of 40 Gbit/s .

A key hardware feature is the board's support for up to 131,072 MAC addresses, enabling large-scale subscriber management . For enhanced network reliability and precision, the H901GPHF supports advanced synchronization protocols, including IEEE 1588v2, alongside comprehensive GPON Type B and Type C protection mechanisms for single and dual-homing configurations, ensuring carrier-class redundancy .

KEY FEATURES & ROUTING LOGIC

- Class C+ Optical Module Support: The board is equipped with high-power, high-sensitivity Class C+ SFP optical modules, facilitating a maximum transmission distance of up to 20 km and enabling a 1:128 split ratio per PON port. This allows a single board to connect up to 2048 individual ONUs .

- High-Precision Protocol Support: Integrated support for IEEE 1588v2 and Synchronous Ethernet (SyncE) enables the delivery of high-precision time synchronization, a critical requirement for mobile backhaul and other latency-sensitive services .

- Advanced Traffic Management: The board provides Hierarchical Quality of Service (HQoS), ensuring granular bandwidth control and traffic shaping. Features include ONU-based and queue-based shaping, as well as comprehensive traffic classification and priority processing .

- Comprehensive Security & OAM: Hardware-level support for rogue ONT (Optical Network Terminal) detection and isolation, coupled with Anti-DOS and Anti-MAC/IP Spoofing mechanisms, secures the access network. The board also supports robust Operations, Administration, and Maintenance (OAM)

capabilities via the embedded Variable-Length OMCI, simplifying network management .

COMPLIANCE & STANDARDS

The H901GPHF is fully compliant with the following critical industry standards, ensuring seamless interoperability and network performance:

- ITU-T G.984.1, G.984.2, G.984.3, G.984.4 (Gigabit-capable Passive Optical Networks (GPON) standards)
- ITU-T G.988 (ONU management and control interface (OMCI) specification)
- IEEE 1588v2 (Precision Time Protocol)
- Support for 9216-byte Jumbo Frames

TECHNICAL SPECIFICATIONS

HARDWARE AND PROCESSING SPECIFICATIONS

Parameter	Specification
Model Number	H901GPHF
Product Type	16-Port GPON OLT Interface Board

| Compatibility | Huawei MA5800-X2, -X7, -X15, -X17 |

| Forwarding Capability | 40 Gbit/s |

| Maximum Frame Size | 2052 bytes (9216 bytes with Jumbo Frame enabled) |

| Power Consumption (Static/Max) | 25 W / 50 W |

| Operating Temperature | -40°C to +65°C |

| Board Dimensions (H x W x D) | 23.3 mm x 257.9 mm x 399.2 mm |

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Board Dimensions (H x W x D)	23.3 mm x 257.9 mm x 399.2 mm
Optical Interface	Class C+ SFP, One-fiber Bi-directional
Operating Wavelength (Tx/Rx)	Tx: 1490 nm / Rx: 1310 nm
Port Rate (Tx/Rx)	Tx: 2.488 Gbit/s / Rx: 1.244 Gbit/s
Minimum Output Optical Power	+3.0 dBm
Maximum Output Optical Power	+7.0 dBm

Maximum Receiver Sensitivity	-32.0 dBm
Overload Optical Power	-12.0 dBm
Extinction Ratio	8.2 dB
Optical Connector Type	SC/PC or SC/UPC
Maximum Transmission Distance	20 km

GPON INTERFACE C+ MODULE SPECIFICATIONS (LASER PARAMETERS)

The following table provides the critical laser and optical specifications for the Class C+ SFP modules integral to the H901GPHF:

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Maximum Receiver Sensitivity	-32.0 dBm
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Extinction Ratio	8.2 dB

| Optical Connector Type | SC/PC or SC/UPC (module dependent) |

| Optical Fiber Type | Single-mode |

| Maximum Transmission Distance | 20 km |

