# Huawei SmartAX MA5800-X7 Chassis - Official Technical Overview & Hardware Datasheet

## PRODUCT IDENTIFICATION

The Huawei SmartAX MA5800-X7 is a next-generation, high-density Optical Line Terminal (OLT) chassis engineered for the demands of the gigabit ultra-broadband era. As a key component of the industry-leading MA5800 series, the X7 model provides a compact yet powerful solution for service providers and enterprises seeking to deliver superior 4K/8K/VR video experiences, support massive IoT connectivity, and enable Fixed Mobile Convergence (FMC) on a unified, future-proof platform.



## CORE INTERNAL TOPOLOGY

The MA5800-X7 is architected around a high-performance, modular chassis that enables flexible configuration and scalability. The system is designed to support a distributed architecture, a first in the OLT industry, where traffic processing is distributed across service boards to significantly enhance overall switching capacity and performance.

The chassis includes the following logical and physical components:

- **Chassis Backplane:** Provides high-speed, non-blocking connectivity between the control boards, service boards, and uplink ports. It delivers a system backplane bus switching capacity of 4.68 Tbit/s.
- **Control Boards (Slots 8, 9):** The central processing and switching fabric of the system. Redundant control boards can be deployed for high availability. The control board also integrates upstream ports for network connectivity.
- **Service/Uplink Boards (Slots 1 - 7):** This platform supports up to 7 service or uplink interface boards, offering immense flexibility. Each slot can deliver a maximum payload bandwidth of up to 200 Gbit/s (with the H901MPLB control board), enabling non-blocking access for high-density 10G PON ports and future readiness for 50G PON.
- **Universal Interface Board (Slot 0):** A dedicated slot for a universal interface board (H901CIUA), which provides vital synchronization, timing, and alarm input/output interfaces.

- **Power Interface Boards (Slots 10, 11):** The chassis supports dual, hot-swappable power interface boards (e.g., H901PILA) for 1+1 redundancy, ensuring maximum system uptime and reliability.
- **Fan Tray:** An integrated, hot-swappable fan tray on the right side of the chassis provides intelligent cooling. It monitors temperature and adjusts fan speeds to maintain stable operating conditions while optimizing power consumption.

SWITCHING AND CONTROL SUBSYSTEM CAPABILITIES

The performance of the MA5800-X7 is driven by its powerful main control boards. These boards serve as the central switching and routing engine, with key specifications varying by model:

- **H901MPLB:** Offers a payload switching capacity of 7.0 Tbit/s. It provides four integrated 10GE/GE uplink ports and supports a per-slot bandwidth of 200 Gbit/s, making it ideal for high-throughput applications.
- **H901MPLA:** Provides a switching capacity of 3.6 Tbit/s with integrated 10GE/GE uplink ports. The per-slot bandwidth is 100 Gbit/s.
- **H902MPLA:** Offers a switching capacity of 3.6 Tbit/s, similar to the H901MPLA.

These boards, when used in a load-sharing mode, ensure that the system can handle massive data volumes with minimal latency, a critical requirement for latency-sensitive services like video and mobile backhaul. Both MPLA and MPLB boards support dual control board redundancy for 1+1 protection.

OPERATIONAL ADVANTAGES

- **Superior Video Experience (4K/8K/VR):** The MA5800's distributed architecture and large packet buffers support a high number of concurrent 4K/8K/VR video users, up to 8,000 with an MPLB control board, ensuring fast channel zapping and smooth streaming. The system supports vMOS/eMDI video quality monitoring for intelligent service assurance.
- **Future-Proof Investment:** The high-bandwidth per-slot design (up to 200 Gbit/s) allows the chassis to support current 10G PON technologies and provides a seamless, in-service upgrade path to 50G PON without replacing the chassis, fully protecting capital investment.
- **Multi-Service Virtualization:** The platform supports network slicing, enabling a single physical OLT to be virtualized into multiple logical OLTs. This allows for the isolation and dedicated management of different services (e.g., residential, enterprise, IoT) on a single, unified infrastructure, simplifying network operations and reducing OPEX.
- **High Reliability & Carrier-Grade Availability:** The system is designed

for >99.999% availability with an estimated MTBF of approximately 45 years. The chassis supports various protection mechanisms, including Type B/C GPON protection, board-level LAG, and in-service software upgrades, ensuring uninterrupted service delivery.

SPECIFICATION MATRIX

PHYSICAL AND ENVIRONMENTAL SPECIFICATIONS

- **Dimensions (W x D x H, excl. mounting ears):** 442 mm x 268.7 mm x 263.9 mm (6U)
- **Dimensions (W x D x H, incl. IEC ears):** 482.6 mm x 268.7 mm x 263.9 mm
- **Dimensions (W x D x H, incl. ETSI ears):** 535 mm x 268.7 mm x 263.9 mm
- **Maximum Fully-Loaded Weight:** 26 kg
- **Chassis Height:** 6U (Standard 19-inch Rack Mountable)
- **Power Supply:** DC: -38.4 V to -72 V (Dual Redundant, e.g., H901PILA)
- **Maximum Input Current:** 40 A (DC)
- **Operating Temperature:** -40°C to +65°C (measured at the air intake vent)
- **Operating Humidity:** 5% RH to 95% RH
- **Altitude:** < 4000 m
- **System Reliability (MTBF):** ≈45 years

| Parameter | Specification |
|---|---|
| Form Factor | 6U Modular Chassis, 19-inch Rack Mount |
| Switching Capacity (MPLB) | 7.0 Tbit/s |
| Per-Slot Bandwidth (MPLB) | 200 Gbit/s |
| Power Supply | Dual Hot-Swappable Redundant DC (-38.4V to -72V) |
| Operating Temperature | -40°C to +65°C |
| Max GPON Ports | 112 |
| Max 10G PON Ports | 112 |
| Max MAC Addresses | 262,143 |
| System Availability | > 99.999% |

PERFORMANCE AND CAPACITY SPECIFICATIONS

- **System Switching Capacity (Load Sharing Mode):**
  - H901MPLA/H902MPLA: 3.6 Tbit/s
  - H901MPLB: 7.0 Tbit/s
- **Max Bandwidth Per Service Slot:**
  - H901MPLA/H902MPLA: 100 Gbit/s
  - H901MPLB: 200 Gbit/s

- **Maximum MAC Addresses:** 262,143
- **Maximum IPv4 Routing Table Entries:** 65,536
- **Maximum IPv6 Routing Table Entries:** 16,384
- **Maximum ARP Table Entries:** 131,072
- **Maximum GPON Ports:** 112
- **Maximum XG(S)-PON Ports:** 112
- **Maximum GE/FE Ports:** 336
- **Maximum 10GE Ports:** 168
- **Maximum Concurrent 4K Video Users (MPLB):** 8,000
- **Maximum Access ONTs:** 7168

REGULATORY COMPLIANCE

The Huawei SmartAX MA5800-X7 chassis and its system software have been validated against a comprehensive suite of industry standards, ensuring interoperability and adherence to global telecom requirements.

- **IPv6 Ready:** The MA5800-X7 has passed the IPv6 Ready Logo Phase-2 certification (Logo ID: 02-C-002024), confirming its compliance with IETF IPv6 core protocols and readiness for commercial IPv6 deployment.
- **Carrier Ethernet & MEF:** Supports a wide range of Carrier Ethernet features, including comprehensive QoS (HQoS, WRED), MPLS/PWE3, and robust Layer

2/Layer 3 VPN capabilities, aligning with Metro Ethernet Forum (MEF) standards.

- **Standards Compliance:** Fully complies with ITU-T and IEEE standards for PON technologies (GPON, XG-PON, XGS-PON, EPON, 10G-EPON), ensuring seamless integration with a broad ecosystem of Optical Network Terminals (ONTs) and third-party equipment.

- **Security & Safety:** The platform supports robust security features, including MACsec for link-layer encryption, AAA, and advanced ACLs for traffic filtering. The chassis design and power systems adhere to stringent safety standards for telecom equipment, with CE, UL, and other regional certifications available upon request.

