25GS-PON MSA Group releases version 4 of 25GS-PON specification

Enhancements to the specification deliver quantum-safe encryption and seamless support for Combo-PON Modules

- Version 4 of the 25GS-PON MSA specification has been released and published
- Major updates in the areas of security, Combo-PON Modules, deployment flexibility, and performance
- See the "Resources" section of the 25GS-PON MSA website at https://www.25gspon-msa.org/ to view the published specification
- 25G PON continues to gain traction as MSA grows to comprise 68 member organizations

COPPELL, Texas, June 16, 2026 – The 25GS-PON Multi-Source Agreement (MSA) Group today announced the release and publication of version 4 of the 25GS-PON specification with significant updates that enhance network security, flexibility, and performance. These advancements further solidify 25GS-PON as a leading technology for next-generation fiber networks. Key updates in version 4 include:

- **Upgraded security with quantum-safe Advanced Encryption Standard (AES)**: The new specification introduces AES with a 256-bit key, offering robust protection against brute force attacks and aligning with the security level of 50G PON.
- **Support for Combo PON modules**: Version 4 explicitly supports Combo PON modules, enabling seamless integration of multiple PON technologies (e.g., XGS-PON and 25G PON) on the same network infrastructure.
- **New optical budget classes**: Two additional optical power budget classes – B+ (28dB) and D (35dB) – have been introduced to extend network reach and capacity, making it easier to deliver high-speed broadband in diverse deployment scenarios.
- **Expanded optical path loss budgets**: The specification now includes upstream optical path loss budgets for E1 and E2 classes, completing the symmetrical downstream/upstream specifications for non-Combo PON use cases. This update supports higher optical path loss classes, enabling greater deployment flexibility.
- **Narrowband option for enhanced performance**: A narrowband option for the upstream wavelength (centered at 1300nm with a width of ±2nm) has been added. Focusing the signal in a smaller, more precise wavelength range improves OLT receiver sensitivity and supports higher optical path losses. It also aligns with ITU-T standards for spectral usage.
- **Co-existence optimization**: A new upstream wavelength and tolerance indication (UWTI) feature has been introduced. This allows the OLT to notify ONUs of permitted wavelengths and tolerances, ensuring smooth coexistence with other PON generations and minimizing interference.
- **Improved implementation flexibility**: To simplify deployments, the minimum extinction ratio for OLT transmitters has been relaxed from 8dB to 7dB, providing greater flexibility for meeting transmitter specifications.

These updates reflect the maturity of 25G PON technology and the MSA Group's commitment to driving innovation in fiber networks. By boosting security, scalability, flexibility, and performance, version 4 of the 25GS-PON MSA specification sets a new benchmark for delivering high-speed broadband services to customers worldwide.

The full specification is publicly available in the “Resources” section of the 25GS-PON MSA website at https://www.25gspon-msa.org/.

About 25GS-PON

25GS-PON is the next step in PON evolution, offering the easiest and most cost-effective upgrade from XGS-PON.

- Delivers a 250% capacity increase over 10 Gb/s XGS-PON, enabling true 10 Gb/s symmetrical services.
- Driven by high-end residential, large enterprise, wholesaling, and 5G transport,
- Leverages mature data center optical technology and readily available components for quick, cost-efficient implementation
- Co-exists with two other PON technologies – including GPON, XGS-PON, and 50G PON – on the same fiber and outside plant.

About the 25GS-PON MSA

The 25GS-PON Multi-Source Agreement (MSA) brings together major operators and leading technology companies to promote and accelerate the development and deployment of 25 Gigabit Symmetrical Passive Optical Network (25GS-PON) technology. 25GS-PON provides communications service providers with the most cost-effective and timely evolution path for PON fiber technology.

The 25GS-PON MSA Group’s 68 members represent a complete ecosystem of operators and system, optical device, semiconductor, component, and test equipment vendors, as well as design and manufacturing service companies. Member organizations include Accton Technology, Airoha, ALPHA Networks, AOI, Asia Optical, AT&T, Azuri Optics, BFW Solutions, CableLabs, Chorus, Chunghwa Telecom, Ciena, CommScope, Comtrend, Cortina Access, Cox Communications, Tsuhan (CTST), CZT, Dobson, EXFO, EZconn, Feneck, Fiberhost, Foxconn (Fii), Frontier, Gemtek, Genexis, HFR, HiLight Semiconductor, Hisense Broadband, Hitron, Humax, Intel, Interphone, JPC, Leeca Technologies, MACOM, MaxLinear, minisilicon, MitraStar Technology, MT2, NBN Co., Nokia, NTT Innovative Devices, OptiComm, Pegatron, Phovel, PICadvanced, Planet Networks, Openreach, Proximus, Sagemcom, Semtech, SiFotonics, Source Photonics, Sumitomo Electric Industries, Taclink, Telus, TraceSpan, uSenlight, VeEx, VIAVI, WNC, Xplore, Zaram Technology, Zhone, ZKTel, and Zyxel Communications.

For more information or to join, visit www.25gspon-msa.org.

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