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HiLight releases Application Note featuring HiLight PMD chipset interfacing with widely adopted MAC for 10G-PON ONUs

A step-by-step guide to interfacing with a Broadcom 10G-PON ONU MAC SoC

HiLight Semiconductor, a world leader in CMOS integrated circuit chips for optical communications, today announced the release of an Application Note targeting customers wishing to use HiLight's 10G-PON PMD chipset with Broadcom's popular ONU MAC SoC ICs.

The application note provides customers with an easy to use step-by-step guide to interfacing the HiLight HLC10P5/6 burst 'Combo' transceiver ICs with a Broadcom MAC SoC that covers PMD Combo pin-2-pin compatibility, BOM component count reduction, optimisation of transmitter and receiver optical performance, and integration software considerations.

Broadcom's MAC SoC ICs are widely used in 10G-PON ONU designs and customers have significant experience using the chipsets and an established software stack. Therefore, customers are continuously looking for ways to reduce BOM costs and improve the optical performance in their ONU designs without a major PCB re-design or firmware re-write. HiLight's CMOS PMD chipset provides customers with a lower cost CMOS IC solution that is pin-2-pin compatible with existing PMD chipsets.

HiLight's HLC10P5 Combo transceiver IC, designed for 10G-EPON and XG-PON1 Asymmetric ONUs, can be used as a direct replacement for existing PMD solutions without any PCB re-design – indeed several BOM components can be removed from the PCB to save additional costs. Transmitter mask margin performance can also be improved over existing solutions when using the HLC10P5.

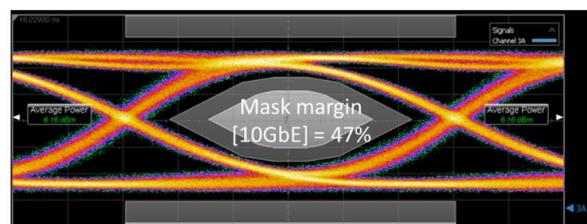
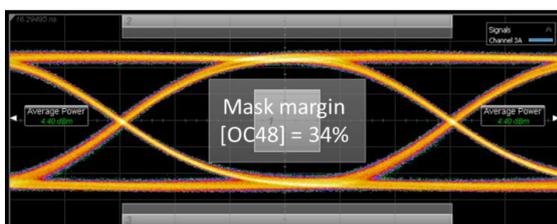


XG-PON ONU with Broadcom BCM68560 MAC SoC IC and HiLight HLC10P5 PMD IC

Typical headline performance metrics for the HLC10P5 solution are 20% reduction in component count, 5% increase in transmitter mask margin and excellent control and stability of transmit power and extinction ratio using HiLight's data rate independent and patented Dual Loop transmitter control function (US Patent 10205532)

Some of the detailed features and topics covered within the applications note include:

- Works 'out of the box' with no external EEPROM due to integrated non-volatile memory for SFF-8472 SFP A0/A2 pages and device settings that are instantly recognised by the Broadcom MAC SoC without further software development
- Integrated MCU and firmware allows high degree of customization in the PMD function for special customer applications. Firmware is stored in the integrated non-volatile memory
- Intelligent internal APD protection circuitry built-in – reduces boost converter circuit component count
- Pin and software compatibility between HLC10P5 and HLC10P6; the same ONU design can be used for multiple standards including GPON, XG-PON, XGS-PON, EPON, 10G-EPON and NG-PON2



Typical transmitter eye diagrams from HLC10P5 (left) and HLC10P6 (right) at 2.5Gbps and 10.3Gbps respectively

“Demand for 10G PON ONUs are exceeding our expectations in 2021, supported by deployments of these products in China, Europe and North America”, commented John Lively, Principal Analyst at LightCounting. “Continuing reductions in cost of 10G PON components is critical for future deployments of this technology. HiLight’s latest chipset offers a path to suppliers to minimize bill of materials and improve transceiver and ONU production yields.”

Tim Davey, Director of Applications at HiLight, commented “The Application Note demonstrates HiLight’s continuing drive to reduce customer ONU product costs. The ease and simplicity with which ONU manufacturers can transition to a HiLight CMOS PMD chipset solution without ONU re-design yet improving optical performance is extremely compelling. While the application note focuses on a Broadcom MAC SoC the interfacing and optimisation principles can be applied equally well to other ONU solutions. The HiLight applications team are able to provide hardware, software and firmware support for the complete ONU solution”

HLC10P5 and HLC10P6 qualified production samples are available immediately on request and interested customers should contact their local sales representative for further information.

The application note (HL-APN-044) entitled “Interfacing HiLight’s PMD Combo ICs with Broadcom’s MAC SoC in 10G-PON ONU Applications” is available by directly contacting the HiLight sales team.

About HiLight Semiconductor Limited:

HiLight Semiconductor Ltd. is a Venture Capital backed, Fabless chip company, founded in 2012 by veterans of several previous start-ups. Specialising in deep sub-micron CMOS, the company designs and supplies the world’s highest performance PMD and PHY ICs for high speed fiber-optics based communications and networking/Datacentre applications.

The company has already shipped over 100 Million ICs to date.

HiLight is headquartered in Southampton, UK, with design offices in Bristol UK and sales and local technical support offices in China (Beijing, Chengdu, Shanghai, Shenzhen, Wuhan), Taipei and Japan.