

Press Release

Lightip demonstrates the first port-agnostic tunable SFP transceiver compliant to ITU-T G.metro at OFC2017

Los Angeles, California, March 22, 2017 – Lightip Technologies is demonstrating the industry’s first port-agnostic tunable SFP/SFP+ transceiver at OFC’2017 in Los Angeles, California. The tunable SFP (T-SFP) is based on its proprietary low-cost V-cavity laser (VCL) chip, which has a very small size and simple wavelength control algorithm, and does not involve any grating or epitaxial regrowth. In addition to the low manufacturing cost related to the compactness, fabrication simplicity and simple electronic driver, the new port-agnostic feature and associated envelope modulation capability of the T-SFP will significantly reduce the installation and maintenance costs for network operators, and will enable a variety of new OAM functionalities.

The port-agnosticism is a key feature of the G.metro standard currently being drafted by Q6/SG15 in ITU-T. Many world famous operators, system equipment vendors and optical module manufacturers are involved in the G.metro study. The G.metro provides optical interface specifications for dense wavelength division multiplexing (DWDM) systems, primarily intended for metro applications. The tail end equipment (TEE) transmitters have the capability to automatically adapt their DWDM channel frequency to the optical demultiplexer/optical multiplexer (OD/OM) or optical add/drop multiplexer (OADM) ports that they are connected to by means of a message channel transmitted from the head end equipment (HEE) through a low-bit rate envelope modulation.

Lightip implemented the G.metro feature using a unique approach that does not require any additional optical component or complex electronic circuit board. It is done completely inside the SFP with almost no increase in manufacturing cost. The G.metro feature can be turned off so that the port-agnostic T-SFP is fully compatible with general purpose T-SFPs.

“The ITU-T G.metro Recommendation is intended for low-cost multi-service access and metro applications including mobile fronthaul/backhaul, enterprise leased line, high-end fixed broadband access, etc. With the development trend of merging between the mobile and fixed-line access, and the emerging 5G mobile networks, WDM will become the main technological choice for the future metropolitan area networks. Low-cost tunable laser is the key enabler in metro access layer. Since Q6/SG15 in ITU-T started G.metro standardization project in 2014, we have discussed with many system equipment vendors and optical module suppliers who actively carried out G.metro standard study. The first version of G.metro Recommendation is expected to be released in 2018. We are very glad to see that Lightip has developed the port-agnostic T-SFP compliant to G.metro with almost no additional cost as compared to general-purpose T-SFPs, which will help to promote the standardization and industrialization of G.metro to realize the low cost optical access scheme”, said Guangquan Wang, G.metro Editor and Director of Network Technology Research Department, Network Technology Research Institute at China Unicom.

At the OFC live demo, Lightip uses its T-SFPs for both the HEE and TEEs. The HEE transmits multi-wavelength Ethernet and CPRI services through an arrayed waveguide grating (AWG) multiplexer using Greenwell GPN7600 and EXFO FTB-720G/880 multiservice testers. The signals are demultiplexed at the TEE end by another AWG. The transmission from TEE to HEE is symmetric. By observing the wavelengths transmitted by the TEEs on an EXFO FTB-5240BP optical spectrum analyzer, one can see the “magic” that when a T-SFP moves from one AWG port to another, its wavelength automatically adapts to the one assigned to that port. The T-SFP can support data rates up to 10Gbps for 10km SMF transmission. The T-SFP based on an externally modulated VCL is currently being developed for longer distance transmissions.

“The technology underlying the port-agnostic feature can also be used for remotely monitoring and controlling the TEE wavelengths through a shared wavelength locker at the HEE end, thus ensuring the long term system reliability without the cost of individual wavelength locker in the T-SFP of each TEE. The remote controllability can also significantly reduce the maintenance cost for operators”, said Dr. Jian-Jun He, Founder and CTO of Lightip, also a professor at Zhejiang University, Fellow of OSA and SPIE. “It also reduces the requirements on other network components. For example, the requirements on the channel wavelength accuracy, loss uniformity and temperature stability of the AWGs can be relaxed by the possibility of adjusting the wavelength and output power of the T-SFP transmitters. The system can achieve optimal overall performance without imposing stringent requirements on each component”.

Lightip is giving the live demo at OFC in booth #3708 at the Los Angeles Convention Center, March 21-23, 2017. It is also exhibiting prototypes of cyclic AWGs for G.metro, in addition to XMD based tunable TOSA, To-can based tunable TOSA and BOSA, as well as fiber pigtailed butterfly and TO packages.

About Lightip Technologies

Lightip Technologies provides high-performance, low-cost and ultra-compact tunable semiconductor lasers and photonic integrated devices for FTTH access, mobile fronthaul/backhaul, and metro networks. Lightip Technologies is incorporated in Ontario, Canada, and Hangzhou, China.