

Flexible device to increase bandwidth in bidirectional optical link

A new method for increasing the bandwidth in bidirectional optical links and passive optical networks has been developed and patented. This method uses a flexible simple, integrated and wavelength-agnostic semiconductor device to achieve re-modulation of the incident seed light with simultaneous phase and intensity modulation. Partners to further develop the system and/or to establish commercial agreements along with technical cooperation are sought.

The Challenge

A fiber arriving to each home (Fiber-To-The-Home, FTTH) can provide broadband access to internet, GBit/s, sharing a common passive optical infrastructure and wavelength-division-multiplexing (WDM-PON).

At each home (ONU), a low cost optical transmitter is required for signal modulation and amplification, providing a small size and reduced power consumption.

The challenge is to provide a higher transmission bandwidth at the same clock rate, for avoiding extra heating and power consumption. In the same way as new computers are nowadays challenged to provide higher computation capacity at the same clock rate also for avoiding excessive CPU heating.

The Technology

The new developed technology takes advance of commercial devices and provides a new method for multiplying the bandwidth provided to the home-user by simultaneous modulation of the phase and intensity of the transmitted light.

Moreover, as the commercial device is wavelength-agnostic, this enhance of the optical bandwidth can be provided at any channel of the WDM-PON to be decided by the operator of the network, providing an important flexibility.

Innovative advantages

- Increased bandwidth provided at the same clock rate.
- Using commercially available semiconductor devices
- Not higher speed electronics are required
- Flexible wavelength of operation
- Adapted to WDM-PON and TDM-PON
- 2x, 4x,... 16x 10 GBit/s at 10GHz electronics

Current stage of development

Prototype and validity test passed. Experimental results published at: Optical Fiber Communication Conference and Exposition (OFC/NFOEC), 2011, paper OThK1, Los Angeles, California, USA.

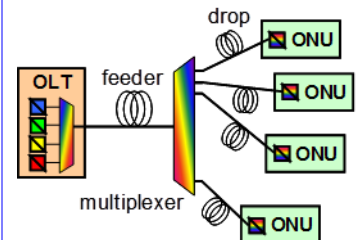
Applications and Target Market

- Broadband Telecom System Vendors
- Manufacturers of lasers and active semiconductor optical devices.
- Broadband Optical Communications networks: access, metropolitan, transport.
- Fiber-to-the-Home networks
- Next Generation - Passive Optical Networks (NG-PON)
- Optical signal processing

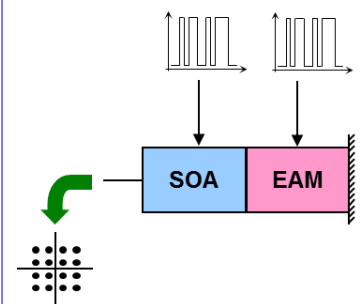
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Increased bandwidth in bidirectional Fiber-To-The-Home and WDM-PONs



Modulate phase and intensity with a commercial integrated and flexible device



2x, 4x,... 16x extra bandwidth at the same clock rate

Business Opportunity

Technology available for licensing with technical cooperation

Patent Status

Priority application

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