

On the remodulation of DPSK passive optical networks

Overview

We propose and demonstrate a novel wavelength remodulation scheme using differential phase-shift keying (DPSK) modulation format in both downstream and upstream signals for "colorless" dense wavelength-division-multiplexed (DWDM) passive optical networks (PONs). Downstream DPSK signal with a reduced modulation depth facilitates upstream phase remodulation and Rayleigh noise suppression. High extinction-ratio is attained in downstream/upstream demodulation. 5-Gb/s upstream data transmitter is realized by directly. This results in the reduction of transmission distances between optical fiber terminal equipment and the optical network units. This happens because Rayleigh' backscattering noise and there is a need to reduce that noise substantially. In this research work channels capacity Dense Wavelength. We propose a novel wavelength-division-multiplexed passive optical network (WDM-PON) architecture with enhanced tolerance toward chromatic dispersion where a DPSK-modulated downstream signal with constant intensity is remodulated at the ONU side with a return to zero (RZ-DPSK).



Article Content

Jan 06, 2026

Wavelength remodulation using DPSK down-and-upstream with high ...

We propose and demonstrate a novel wavelength remodulation scheme using differential phase-shift keying (DPSK) modulation format in both downstream and upstream signals for "colorless"dense ...

Jul 04, 2026

Mitigation of Rayleigh Backscattering in WDM Passive Optical ...

Recent development on time and wavelength-division multiplexed passive optical network (TWDM-PON) for next-generation passive optical network stage 2 (NG-PON2).

Apr 27, 2026

Optical Phase Remodulation for 10-Gb-s WDM-PON with ...

In this paper, we propose a novel remodulation scheme for 10-Gb/s WDM-PON with single feeder fiber by using downstream DPSK with reduced modulation depth (RMD) and upstream DPSK with full ...

Sep 18, 2025

Simultaneous DPSK demodulation and wavelength conversion ...

We propose a scheme for mitigating Rayleigh backscattering noise and demodulating differential phase-shift keying (DPSK) signals in wavelength-division-multiplexed passive optical...

Mar 25, 2026

WDM PON using 10-Gb/s DPSK downstream and re-modulated 10 ...

Simulation results indicate that error-free operation can be achieved in a 20-km transmission, and the receiver sensitivity of return-to-zero differential phase-shift keying (RZ-DPSK) ...

Dec 16, 2025

Symmetric 10

A 10 Gb/s bidirectional wavelength division multiplexing passive optical network (WDM-PON) with reflective semiconductor optical amplifier (RSOA) based colorless optical network unit ...

Sep 18, 2025

Wavelength remodulation scheme using DPSK downstream and ...

We propose a novel wavelength-division-multiplexed passive optical network (WDM-PON) architecture with enhanced tolerance toward chromatic dispersion where a DPSK-modulated downstream signal ...

Jun 05, 2026

An optical network unit for WDM access networks with downstream ...

We investigate the use of optical differential phase-shift keying (DPSK) as the downstream modulation format in a low-cost upstream data remodulation scheme for a wavelength-division multiplexing ...

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For more information, pricing, or custom solutions, please contact us:

Website: <https://www.iiss.co.za>

Email: sales@iiss.co.za

Phone: +27 63 174 2895

Address: Unit 8, Innovation Park, 15 Rivonia Road, Sandton, Johannesburg, 2196, South Africa

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