

## 55 dB High Gain L-Band EDFA Utilizing Single Pump Source

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**Abstract :** In this paper, we experimentally investigate the performance of an efficient high gain triple-pass L-band Erbium-Doped Fiber (EDF) amplifier structure with a single pump source. The amplifier gain and noise figure variation with EDF pump power, input signal power and wavelengths have been investigated. The generated backward Amplified Spontaneous Emission (ASE) noise of the first amplifier stage is suppressed by using a tunable band-pass filter. The amplifier achieves a signal gain of 55 dB with low noise figure of 3.8 dB at -50 dBm input signal power. The amplifier gain shows significant improvement of 12.8 dB compared to amplifier structure without ASE suppression.

**Keywords :** optical amplifiers, EDFA, L-band, optical networks

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