

Single stage gain-clamped L-band EDFA with C-band ASE saturating tone.

ABSTRACT

We demonstrate a single-stage gain-clamped L-band Erbium-doped fiber amplifier with 1480 nm pump wavelength. The gain-clamping technique is achieved by utilizing the backward propagation of C-band amplified spontaneous emission (ASE). This unwanted noise is reflected back into the optical amplifier and its intensity is adjusted using the variable optical attenuator. The C-band ASE sets the population inversion level along the Erbium doped-fiber and limits the L-band signal amplification to a specific value. The whole optical bandwidth in L-band can be employed for signal amplification since the saturating tone is out of the band. The gain dynamic range of 11.7 dB is obtained between 21.7 and 10.0 dB with noise figure of less than 5.5 dB for signal power up to 2 dBm.

Keyword: Amplified spontaneous emissions; Backward propagation; Erbium doped; Gain dynamics; Gain-clamped; Gain-clamping; L-band EDFA; Optical amplifier; Optical band width.