

[ME06]

Gain-clamped L-band EDFA using narrow and broadband fiber Bragg gratings for gain-flattened

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A gain-clamped long band erbium-doped fiber amplifier (L-band EDFA) up to 0 dBm input power with a flattened gain bandwidth of 32 nm at ± 1.1 dB flatness is demonstrated using the narrow and broadband fiber Bragg grating (FBG). The configuration consist a narrow band FBG at circulator1 input and broad band FBG at output end. The lasing laser power is created by the backward ASE from the erbium-doped fiber (EDF) is controlled by the variable optical attenuator (VOA) that connected between circulator1 and circulator2. The gain is clamped at 6.49 dB from -40 to 0 dBm with gain variation of less than 0.14 dB at maximum clamping setting and flat gain from 1568 to 1600 nm with ± 1.1 dB gain variation. The design produced a maximum noise figure (NF) about 10.39 dB for -30 dBm input power at 1568 nm due to the insertion loss of two circulator at the input end.