Simplified ASE correction algorithm for variable gain-flattened Erbium-doped fiber amplifier

ABSTRACT

We demonstrate a simplified algorithm to manifest the contribution of amplified spontaneous emission in variable gain-flattened Erbium-doped fiber amplifier (EDFA). The detected signal power at the input and output ports of EDFA comprises of both signal and noise. The generated amplified spontaneous emission from EDFA cannot be differentiated by photodetector which leads to underestimation of the targeted gain value. This gain penalty must be taken into consideration in order to obtain the accurate gain level. By taking the average gain penalty within the dynamic gain range, the targeted output power is set higher than the desired level. Thus, the errors are significantly reduced to less than 0.15 dB from 15 dB to 30 dB desired gain values.

Keyword: Fiber optics amplifiers; Oscillators; Fibers; Erbium; Fiber optics; Optical communications