Performance Analysis of Designing a Hybrid Optical Amplifier (HOA) for 32 DWDM Channels in L-band by using EDFA and Raman Amplifier

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Abstract

In this paper, the hybrid amplifier has been design and simulated using Optisystem Software version 13. This design of HOA using two types of optical fiber amplifiers such, Raman amplifier and Erbium Doped Fiber Amplifier (EDFA) to amplifying 32 channels in L-band (1560-1600 nm). The pumping power and pumping wavelength for the two types of amplifiers are the same and equal to 300mw and 1490nm respectively, the EDFA and Raman amplifier are using backward pumping configuration. The overall gain and noise of this design is 38.52±1.28 dB and 4.5±0.7 dB respectively without using any flatting technique. But by using a new flatting technique based on Gaussian filter between the Raman and EDFA the gain ripple enhanced to 38.46±0.55 dB with noise 4.5±0.7 dB over the L-band in the optical communication system spectrum.

References

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Keywords

EDFA, Raman Amplifier, Hybrid optical amplifier, DWDM, L-band.