Gain Flattening of L-band EDFA - Raman Hybrid Amplifier

International Journal of Computer Applications
Foundation of Computer Science (FCS), NY, USA

Volume 174
Number 3

Year of Publication: 2017

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10.5120/ijca2017915353

Abstract

A design of L-band EDFA cascaded with distributed Raman amplifier has been optimized so as to improve the gain, noise figure and gain variation. Firstly, the L-band EDFA system has been designed and the effect of change in input power, change in the length of the doped fiber and the use of various pumps on EDFA has been examined. It has been observed that gain obtained is maximum with a low noise figure at 1480nm pump with the length of doped fiber of 150m. Secondly, this system is then cascaded with distributed Raman amplifier (DRA) to form a hybrid optical amplifier (HOA) so as to further improve the gain, noise figure and gain flatness. The HOA system has the best flat gain spectrum of ±0.73dB over the bandwidth of 42nm with the gain of 29.43dB and the noise figure of 4.403dB.

References

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Technology 78, pp.74-78, 2016.


Index Terms

Computer Science

Wireless

Keywords

EDFA (Erbium doped fiber amplifier), L-band, Gain, Noise figure (NF), Hybrid optical amplifier (HOA), Distributed Raman amplifier (DRA), Gain flatness.