

# **Abstract**

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## **Performance of Digital Optical Communication Link: Effect of In-Line EDFA Parameters**

The performance of a base band digital optical communication link with in-line Erbium doped fiber amplifier (EDFA) is studied. A good measure for digital communication link is the Q-factor. In this paper, the Q-factor is theoretically evaluated as a function of optical signal to noise ratio ( $SNR_{opt}$ ) and is compared with simulation results showing a fair agreement. This comparison helps in making an accurate prediction for the value of Q-factor when all noise sources are considered. Also, the effect of Erbium ion density and doped fiber length of EDFA on bit error probability is investigated.