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| **Title:** | Transmission Performance Analysis of Long-Haul WDM Network Employing Single Mode Fiber, Dispersion Compensating Fiber and Erbium Doped Fiber Amplifier | | |
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| **Published Journal Name:** | AIUB Journal of Science and Engineering (AJSE) | | |
| **Type of Publication:** | Journal | | |
| **Volume:** | 9 | Issue | 1 |
| **Publisher:** | ORP-AIUB | | |
| **Publication Date:** | August, 2010 | | |
| **ISSN:** | 1608-3679 | | |
| **DOI:** | https://orp.aiub.edu/ajse-09-01 | | |
| **URL:** | https://orp.aiub.edu/ajse-09-01 | | |
| **Other Related Info.:** | Page 27-32 | | |
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| **Abstract:** |  |
| The performance of Erbium Doped Fiber Amplifier (EDFA), Single Mode Fiber (SMF) and Dispersion Compensating Fiber (DCF) in a dynamic and reconfigurable Wavelength Division Multiplexing (WDM) system has been demonstrated in this simulation study. Eight WDM channels, each channel running at 40 Gbps, are transmitted through SMF, DCF and EDFAs. The effect of long distance transmission of optical signals to the value of OSNR, Q factor and bit error rate (BER) performance in the WDM optical network, keeping the Bit Error Rate (BER) or eye pattern in acceptable range has been observed. The WDM system trial using EDFA’s, SMF and DCF shows acceptable but deteriorated eye patterns and bit error penalties upto 420 km of transmission distance. Output power of the system was kept almost constant (-12 dBm) for the whole simulation process. Our simulation model can inhibit dispersion to a minimum possible limit due to the application of DCF (dispersion value is -85 ps/nm/km) along with the single mode fiber (dispersion value is 17 ps/nm/km). Gain flatness is also maintained by keeping the value of input power and output power equal while performance of the network is analyzed. | |