Abstract

The radio-over-fiber (RoF) system is one of the potential schemes for the future broadband wireless communication systems such as mobile communications, hotspots and suburban areas. The use of Dense Wavelength Division Multiplexing WDM system is responding to the demands for high data rate applications and reasonable mobility for broadband communication.

The work aims to investigate the performance of DWDM system utilizing Eribium Dopped Fiber amplifiers EDFAs and Dispersion Compensating Fiber DCF for different length of optical fiber and bit rates. The most effective factors causes performance degradations are the attenuation and dispersion. EDFA was introduced in the proposed system model as a solution to encounter the effects of attenuation and scattering losses, while the DCF utilized to mitigate the effect of dispersion. The simulation was implemented using optiwsystem 7 and matlab R2011a. The results show that the use of EDFA and DCF make significantly boosts the performance of DWDM RoF system and increases the length of the fiber at which a Bit Error Rate BER of 10-9 can be obtained.

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Index Terms

Computer Science
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Keywords

DWDM  EDFA  DCF  BER  Q-factor