



Optical Wireless Communication WDM transmission: Design and Evaluation

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Abstract:

In this speech, high-speed optical wireless communication (OWC) technologies in C band (1550 nm) will be briefly addressed. Firstly, two proposed OWC schemes will be implemented and demonstrated. The transmission structures are multiple wavelengths, bi-directional transmission with 10Gb/s modulation for each channel. Compared results including back-to-back or uni-directional transmission will be provided. In free space transmission, some important issues such as temperature gradient, laser misalignment, laser beam divergent and cloudy/rainy condition to system performance will be analyzed. The experimental results of bit error rate (BER) performance will be addressed. Then, we evaluate the system performances between optical fiber transmission and optical wireless transmission in an outdoor bridge before and after it is broken. We find that negligible power penalty is induced for OWC case. A summary will be given to conclude that OWC is a good backup candidate for fiber-based communication.

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3. Yu, Yi-Lin & Kishikawa, Hiroki & Goto, Nobuo & Liaw, S.K.. (2020). D-Shaped Silicon Core Fiber based Surface-Plasmon-Resonance Refractive Index Sensor in 2-μm. Applied Optics. 59. 10.1364/AO.387832.
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