

Bias Optimization of Mach-Zehnder Modulator Considering RF Gain on OFDM Radio-Over-Fiber System

Authors : Ghazi Al Sukkar, Yazid Khattabi, Shifen Zhong

Abstract : Most of the recent wireless LANs, broadband access networks, and digital broadcasting use Orthogonal Frequency Division Multiplexing techniques. In addition, the increasing demand of Data and Internet makes fiber optics an important technology, as fiber optics has many characteristics that make it the best solution for transferring huge frames of Data from a point to another. Radio over fiber is the place where high quality RF is converted to optical signals over single mode fiber. Optimum values for the bias level and the switching voltage for Mach-Zehnder modulator are important for the performance of radio over fiber links. In this paper, we propose a method to optimize the two parameters simultaneously; the bias and the switching voltage point of the external modulator of a radio over fiber system considering RF gain. Simulation results show the optimum gain value under these two parameters.

Keywords : OFDM, Mach Zehnder bias voltage, switching voltage, radio-over-fiber, RF gain

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