

Abstracts

Tuned Optical Receivers for Microwave Subcarrier Multiplexed Lightwave Systems

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An analysis of tuned optical receiver noise performance for microwave subcarrier multiplexed lightwave systems is presented. The effect of correlation between the gate and the drain HEMT noise sources is included, and the design of tuning networks to obtain partial noise cancellation is investigated. An optimization algorithm is used to determine the tuning element values for minimizing noise. Improvements in noise of 16 dB for a 60 video channel SCM system, and 12 dB for a 120 channel system are demonstrated, allowing a significant increase in passive optical network distribution capacity, and design results for tuned front-end receivers encompassing the effects of p-i-n, HEMT and SCM band parameters are presented.

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