

Abstracts

Lightwave Subcarrier CATV Transmission Systems

T.E. Darcie and G.E. Bodeep. "Lightwave Subcarrier CATV Transmission Systems." 1990 Transactions on Microwave Theory and Techniques 38.5 (May 1990 [T-MTT] (Special Issue on Applications of Lightwave Technology to Microwave Devices, Circuits, and Systems)): 524-533.

We describe the design and performance of multichannel AM-VSB lightwave CATV systems. Requirements on linearity and noise are derived, and factors limiting the performance of the laser transmitters and receivers are discussed. For high-performance lasers the carrier to-noise ratio and composite second- and third-order distortions are acceptable for video trunk systems. Impairments because of fiber reflections and dispersion and mode partition fluctuations in the laser are discussed. Feedforward, feedback, and predistortion are discussed, but difficulties with each prevent immediate application. Finally, the use of LiNbO₃ external modulators and high-power solid-state lasers is considered. The third-order distortion and insertion loss of the modulator more than counteract the high available laser power (100 mW), making this alternative unattractive unless a third-order linearizer can be implemented.

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