# Abstracts

## Comparison of an in-line asymmetric directional coupler modulator with distributed optical loss to other linearized electrooptic modulators

*S.A. Hamilton, D.R. Yankelevich, A. Knoesen, R.T. Weverka and R.A. Hill. "Comparison of an in-line asymmetric directional coupler modulator with distributed optical loss to other linearized electrooptic modulators." 1999 Transactions on Microwave Theory and Techniques 47.7 (Jul. 1999, Part II [T-MTT] (Special Issue on Microwave and Millimeter-Wave Photonics)): 1184-1193.*

The transfer function of an external modulator is the critical factor that determines the spurious free dynamic range, signal power gain, and noise figure of a wide-band analog RF-photonic link. We present an in-line asymmetric directional coupler modulator with distributed optical loss capable of providing a transfer function linearized to the fourth order for multioctave bandwidths. This modulator compares favorably with multiple modulator suboctave linearization techniques consisting of series symmetric directional coupler and series Mach-Zehnder modulators and superoctave parallel Mach-Zehnder, and cascaded sections containing series Mach-Zehndersymmetric directional coupler modulators. The optimum bias point for the asymmetric directional coupler modulator is determined by device dimensions and material parameters with relative insensitivity to errors introduced during fabrication. Optical insertion loss imposes significant limitations on modulator performance. An implementation of an in-line asymmetric directional coupler modulator is discussed that eliminates excess loss due to fiber coupling in order to achieve a large RF power gain and competitive noise figure compared to the linearization configurations.

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