Abstracts

A Microwave Ferrite Single-Sideband Modulator

A. Clavin. "A Microwave Ferrite Single-Sideband Modulator." 1962 Transactions on Microwave Theory and Techniques 10.2 (Mar. 1962 [T-MTT]): 98-102.

A microwave single-sideband modulator has been designed utilizing two reflection types of Faraday rotation ferrite-balanced modulators. Power is fed to the two balanced modulators by means of a 3-db quadrature hybrid such that each modulator has equal incident power with a 90-degree phase difference. The output power of the balanced modulators is combined by means of a magic tee sum and difference circuit. It is shown that if the modulation signals applied to the balanced modulators are in phase quadrature, the upper sideband will appear at the output sum arm and the lower sideband will appear in the output difference arm. An analysis of the device relates the spurious and undesired sidebands to the conversion loss, and a method is proposed for minimizing carrier output. The drive power is reduced due to the use of reflection-type balanced modulators, and experimental data is presented for the modulation frequency impedance and drive power requirements. The temperature and frequency sensitivity of the undesired sidebands have also been measured. A number of applications of the device are discussed.

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