Abstracts

The Amplitude Response of a Coupled Transmission Line, All-Pass Network Having Loss

R.A. Kolker. "The Amplitude Response of a Coupled Transmission Line, All-Pass Network Having Loss." 1967 Transactions on Microwave Theory and Techniques 15.8 (Aug. 1967 [T-MTT]): 438-443.

The voltage transfer function of a first- and second-order coupled transmission line, all-pass network having loss is derived. The amplitude response is calculated from the transfer function. It is shown that the amplitude response is completely determined when alpha, the real part of propagation function, is known. A method for calculating alpha is presented and an example is given. The results show that the losses (dielectric and conductor) cause periodic dips in the amplitude response of the all-pass networks. However, for practical materials and configurations, the peak amplitude loss is less than 0.4 dB for the first two periodicities. The results show that, for most applications, it is possible to cascade many first-order or second-order lines before the amplitude response must be equalized.

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