Abstracts

Fundamental Limits on Conversion Loss of Double Sideband Resistive Mixers

A.J. Kelly. "Fundamental Limits on Conversion Loss of Double Sideband Resistive Mixers." 1977 Transactions on Microwave Theory and Techniques 25.11 (Nov. 1977 [T-MTT]): 867-869.

Although the resistive mixer has been the subject of numerous studies, these have all dealt with specific cases for terminations at the higher order mixing products (idlers). This paper deals with the general case of the double sideband mixer, and demonstrates that when no energy is dissipated at the idler frequencies the fundamental limit on conversion loss is 3 dB, with the lost energy being equally divided between conversion to the image and reflection loss at the signal port. Also treated is the case where matched loads are presented to each idler. It is shown that, in this case, the theoretical limit on conversion loss is 3.92 dB (20 log pi/2), independent of the mixer configuration.

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