Abstracts

Noise Figure and Conversion Loss of the Schottky Barrier Mixer Diode

M.R. Barber. "Noise Figure and Conversion Loss of the Schottky Barrier Mixer Diode." 1967 Transactions on Microwave Theory and Techniques 15.11 (Nov. 1967 [T-MTT]): 629-635.

The theory of mixer operation is briefly reviewed and the results presented in graphical form convenient to the designer. In particular, the minimum noise figure, conversion loss, and the source and output impedances are plotted as functions of the pulse duty ratio of the diode current. Emphasis is placed on the pulse duty ratio as a more fundamental parameter for defining mixer operation than the magnitude of the diode voltage which is generally nonsinusoidal. It is shown that Schottky diode mixers should exhibit single sideband noise figures as low as 3 dB at X band when used in conjunction with 1.5 dB noise figure IF amplifiers, provided the diodes have cutoff frequencies higher than 500 GHz.

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