Abstracts

Phase Noise Characterization of SAW Oscillators Based on a Newton Minimization Procedure (1990 Vol. III [MWSYM])

D.P. Klemer, E.E. Clark, III and K.-M. Shih. "Phase Noise Characterization of SAW Oscillators Based on a Newton Minimization Procedure (1990 Vol. III [MWSYM])." 1990 MTT-S International Microwave Symposium Digest 90.3 (1990 Vol. III [MWSYM]): 1269-1272.

A Newton-Raphson iterative technique is used to optimize the values of circuit parameters which characterize a voltage-controlled SAW-stabilized oscillator (VCSO). An expression given by Parker is used to calculate double-sideband phase-noise-to-carrier ratio; good agreement between calculations and phase noise measurements is achieved by minimizing the squared-error through the use of a Newton-Raphson minimization scheme. Less accurately known circuit parameters are thus optimized in an iterative fashion using exact expressions for the elements of the Hessian matrix. This technique is useful for the accurate determination of circuit parameter values; alternatively it can be used in the design of low-phase-noise oscillators by using desired (rather than measured) phase-noise values in the objective function to be minimized.

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