Abstracts

Analytical comparison between time- and frequency-domain techniques for phase-noise analysis

A. Suarez, S. Sancho, S. Ver Hoeye and J. Portilla. "Analytical comparison between time- and frequency-domain techniques for phase-noise analysis." 2002 Transactions on Microwave Theory and Techniques 50.10 (Oct. 2002 [T-MTT]): 2353-2361.

In the literature, different techniques have been presented for the phase-noise analysis of free-running oscillator circuits. In order to give some insight into the relationships existing between them, an analytical comparison is carried out in this paper between three different approaches. Two of them are time-domain approaches, based on Floquet's theory and the impulse sensitivity function, respectively, and the third one is the carrier modulation approach, in frequency domain. The application of Floquet's theory enables the calculation of periodic sensitivity functions to the noise perturbations. Here, the possibility to determine these functions through harmonic balance is demonstrated. This allows applying the whole stochastic characterization of phase noise, obtained from time-domain analysis, to circuits simulated through harmonic balance. For illustration, calculations in a cubic-nonlinearity oscillator are presented.

❑ Return to main document.