Abstracts

A General Method to Simulate Noise in Oscillators Based on Frequency Domain Techniques

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A perturbation theory for simulating the noise behavior in free running microwave oscillators based on a piece-wise harmonic balance technique is outlined. The single-sideband phase noise of an oscillator is derived from the system equations describing the deterministic and stochastic behavior. The method is neither limited to a certain circuit topology nor to certain types of noise sources. The theory is applied to a planar integrated microwave oscillator at 14 GHz to demonstrate the applicability of the theory. Simulated and measured single-sideband phase noise agree within the accuracy of measurement.

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