Abstracts

Noise Calculations and Experimental Results of Varactor Tunable Oscillators with Significantly Reduced Phase Noise

V. Gungerich, F. Zinkler, W. Anzill and P. Russer. "Noise Calculations and Experimental Results of Varactor Tunable Oscillators with Significantly Reduced Phase Noise." 1995 Transactions on Microwave Theory and Techniques 43.2 (Feb. 1995 [T-MTT]): 278-285.

The single-sideband phase noise of varactor tunable GaAs MESFET oscillators is investigated. Two oscillator circuits with different microstrip resonator circuits were designed and fabricated. Using a resonator consisting of coupled microstrip lines instead of a single microstrip line, which is a planar monolithically integrable structure, phase noise is reduced significantly because the quality factor is higher for the coupled resonator. The phase noise is calculated using a nonlinear time domain method, which solves the Langevin equations, describing the deterministic and stochastic behavior of an oscillator by perturbation methods. Calculated and measured phase noise agree within the accuracy of measurements. The very low phase noise of 95 dBc/Hz at 100 kHz offset frequency is achieved.

❑ Return to main document.