Abstracts

An efficient design method of microwave oscillator circuits for minimum phase noise

M. Prigent, M. Camiade, J.C. Nallatamby, J. Guittard and J. Obregon. "An efficient design method of microwave oscillator circuits for minimum phase noise." 1999 Transactions on Microwave Theory and Techniques 47.7 (Jul. 1999, Part I [T-MTT]): 1122-1125.

In this paper, we describe a newly developed design method of high-Q microwave oscillator circuits leading to the minimum phase noise for a given transistor and resonator. The key point of the method is the maximization of the energy stored in the resonator and its transfer to the controlling input voltage port of the transistor. The proposed method has been applied to two experimental oscillators setups with pseudomorphic high electron-mobility transistors (PHEMTs). A state of-the art phase noise of -50 dBc at 10-Hz offset from carrier with a 1/f/sup 3/ slope has been measured at room temperature with a 9.2 GHz oscillator. The efficiency of this design method and its ease of use represent, in our opinion, a real breakthrough in the field of low noise transistor oscillator circuit design.

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