Abstracts

Analysis and Design of a Single-Resonator GaAs FET Oscillator with Noise Degeneration

Z. Galani, M.J. Bianchini, R.C. Waterman, Jr., R. DiBiase, R.W. Laton and J.B. Cole. "Analysis and Design of a Single-Resonator GaAs FET Oscillator with Noise Degeneration." 1984 Transactions on Microwave Theory and Techniques 32.12 (Dec. 1984 [T-MTT] (1984 Symposium Issue)): 1556-1565.

This paper presents an analysis of a low-noise dielectric resonator GaAs FET oscillator in a frequency-locked loop (FLL), which is used for FM noise degeneration. In this circuit, one resonator serves both as the frequency-determining element of the oscillator and as the dispersive element of the discriminator. The results of the analysis are used to generate design guidelines. These guidelines were followed in an experimental realization of an X-band circuit. The measured FM noise was -120 and -142 dBc/Hz at 10- and 100-kHz offset frequencies, respectively, and corresponded closely to predicted results.

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