Abstracts

Transmission-line stabilized monolithic oscillators

Kian Sen Ang, M.J. Underhill and I.D. Robertson. "Transmission-line stabilized monolithic oscillators." 2001 Transactions on Microwave Theory and Techniques 49.2 (Feb. 2001 [T-MTT]): 395-398.

A novel technique for frequency stabilization and phase-noise reduction of monolithic oscillators is presented in this paper. It employs simple transmission-line resonators, which are many wavelengths long to increase the oscillator quality factor. Monolithic oscillators at 20 and 40 GHz are realized for the application of this technique. Phase noise reduction of more than 20 dB was achieved for both oscillators. The single-sideband phase noise obtained was -100 dBc/Hz at 100-kHz offset for the 20-GHz oscillator and -90 dBc/Hz at 1-MHz offset for the 40-GHz oscillator. The approach is implemented by using readily available transmission lines, which are open- or short-circuited at one end and connected to the monolithic-microwave integrated-circuit (MMIC) oscillator at the other end. Thus, it presents significant potential in the development of low-cost MMIC oscillators with enhanced noise performance.

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