Abstracts

Inter-Injection-Locked Oscillators for Power Combining and Phased Arrays

K.D. Stephan. "Inter-Injection-Locked Oscillators for Power Combining and Phased Arrays." 1986 Transactions on Microwave Theory and Techniques 34.10 (Oct. 1986 [T-MTT] (Special Issue on New and Future Applications of Microwave Systems)): 1017-1025.

This paper presents a novel approach to synchronizing the phases of several oscillators for coherent power combining either in a conventional power-combining circuit or in free space as each oscillator drives an antenna element in a phased array. A set of nonlinear differential equations is derived to predict the system's behavior. These equations are used in the computer-aided design and construction of a demonstration three-oscillator inter-injection-locked system at VHF. Good qualitative agreement between initial experimental results and theoretical predictions is observed, and applications of the inter-injection-locking concept to systems are discussed.

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