Abstracts

A new beam-scanning technique by controlling the coupling angle in a coupled oscillator array

Jae-Ho Hwang and Noh-Hoon Myung. "A new beam-scanning technique by controlling the coupling angle in a coupled oscillator array." 1998 Microwave and Guided Wave Letters 8.5 (May 1998 [MGWL]): 191-193.

The authors present a new technique for electronic beam scanning of a coupled oscillator array. A constant phase progression in a coupled oscillator array is achieved by controlling the coupling phase of the outermost coupling circuits only, while that of the innermost coupling circuits is zero and all free-running frequencies of the oscillators are the same. Analytical solution of nonlinear phase dynamic equations changes periodically as a piecewise-linear function of coupling phase only. The theory developed here is verified using a four-element oscillator array operating at 6.16 GHz. The full scan range is measured to be -17/spl deg/ to 18/spl deg/ off broadside. This scan range is very close to the theoretically achievable scan range of -19.2/spl deg/ to 19.2/spl deg/ for this array.

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