Abstracts

A hybrid nonlinear delay line-based broad-band phased antenna array system

R.P. Hsia, W.-M. Zhang, C.W. Domier and N.C. Luhmann, Jr.. "A hybrid nonlinear delay line-based broad-band phased antenna array system." 1998 Microwave and Guided Wave Letters 8.5 (May 1998 [MGWL]): 182-184.

Nonlinear delay line (NDL) technology has been utilized to implement a proof-of-principle, broadband, 8-channel, linear, hybrid NDL-based phased antenna array (PAA) system. The hybrid NDLs provide up to 267 ps analog, variable true time delay (TTD) with <5-dB measured insertion loss. A PAA system incorporating wide-band feed, transition, and antenna elements has been developed for broad-band (4-18 GHz), electronically controlled beam steering. The current system has demonstrated up to /spl plusmn/180 beam steering from 4 to 5 GHz, and /spl plusmn/6/spl deg/ at 6 GHz in good agreement with theoretical predictions; monolithic implementations have been designed to provide /spl plusmn/19/spl deg/ beam steering at frequencies up to 18 GHz and are currently being fabricated. This system provides a wide-band, low-cost, high-precision alternative to conventional PAA technologies.

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