Abstracts

Optical-fiber grating-based beamforming network for microwave phased arrays

R.A. Minasian and K.E. Alameh. "Optical-fiber grating-based beamforming network for microwave phased arrays." 1997 Transactions on Microwave Theory and Techniques 45.8 (Aug. 1997, Part II [T-MTT]): 1513-1518.

A new photonic-based beamforming network that can realize a large number of simultaneous and independent beams in a wide-band phased-array antenna, and which eliminates optical beat-noise interference is presented. It is based on discrete and chirped Bragg-grating true-time delay elements and photodetector arrays at each beam port. This achieves a highly parallel delay-processing structure for signal equalization and eliminates the fundamental optical beat-noise limitation to the realization of large array sizes. Results show a very substantial reduction in the number of interconnects required of 98.4% for a 512-beam array and 99.2% for a 1024-beam array, in comparison to conventional beamforming techniques.

❑ Return to main document.