Abstracts

Optical up-conversion on continuously variable true-time-delay lines based on chirped fiber gratings for millimeter-wave optical beamforming networks

J.L. Corral, J. Marti and J.M. Fuster. "Optical up-conversion on continuously variable true-time-delay lines based on chirped fiber gratings for millimeter-wave optical beamforming networks." 1999 Transactions on Microwave Theory and Techniques 47.7 (Jul. 1999, Part II [T-MTT] (Special Issue on Microwave and Millimeter-Wave Photonics)): 1315-1320.

An electrooptical up-converting modulation scheme has been considered on chirped-fiber-grating-based (CFG) true-time-delay lines for optical beamforming networks. A rigorous analytical study about the effect of both the up-conversion process and CFG dispersion on the amplitude and delay of detected signal is presented. Simulations and measurements show that the bandwidth limitation of the delay line due to the fiber grating dispersion is clearly improved if compared to the conventional intensity modulation scheme, while the time-delay performance over a 2-30 GHz bandwidth is maintained (/spl sigma//sub max/=/spl plusmn/1 ps). This new concept is used on an optical beamforming network architecture for a millimeter-wave (15-25 GHz) phased array antenna showing a promising performance.

❑ Return to main document.