Abstracts

Fiber-optic true time steering of an ultrawide-band receive array

M.Y. Frankel, P.J. Matthews and R.D. Esman. "Fiber-optic true time steering of an ultrawide-band receive array." 1997 Transactions on Microwave Theory and Techniques 45.8 (Aug. 1997, Part II [T-MTT]): 1522-1526.

We report the development and demonstration of the first true time-delay (TTD) fiber-optic beamformer for ultrawideband antenna receive operation. The beamformer is based on a dispersive-fiber prism configuration that properly time delays the signals originating at each receiving element for coherent combining in the microwave domain. The time-steered receive antenna consists of eight spiral elements arranged into a one-dimensional (l-D) sparsely populated array. The receive array shows an instantaneous bandwidth of 6-18 GHz, limited by the available matched microwave amplifiers. The array performance is measured in an anechoic chamber and exhibits unprecedented squint-free steering over an azimuth scan of 120/spl deg/ over the full frequency range.

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