Abstracts

Free-Space Power Combining and Beam Steering of Ultra-Wideband Radiation Using an Array of Laser-Triggered Antennas

E.E. Funk and C.H. Lee. "Free-Space Power Combining and Beam Steering of Ultra-Wideband Radiation Using an Array of Laser-Triggered Antennas." 1996 Transactions on Microwave Theory and Techniques 44.11 (Nov. 1996 [T-MTT]): 2039-2044.

A mode-locked laser is used to synchronize jitter-free ultrawideband (UWB) pulse generation at an array of UWB antenna elements. The jitter-free pulses radiated by each element add together in free space to produce a radiated field pattern that is steerable via optical true-time-delay techniques. The results from a three element array experiment are presented and used to develop a model for an N-element phased array. A transmission-line model is presented for a single array element, which includes the functions of energy storage, as well as UWB pulse generation and radiation.

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