Abstracts

Self-Heterodyning Optical Waveguide Beam Forming and Steering Network Integrated on Lithium Niobate Substrate

K. Horikawa, Y. Nakasuga and H. Ogawa. "Self-Heterodyning Optical Waveguide Beam Forming and Steering Network Integrated on Lithium Niobate Substrate." 1995 Transactions on Microwave Theory and Techniques 43.9 (Sep. 1995, Part II [T-MTT] (Special Issue on Microwave and Millimeter Wave Photonics)): 2395-2401.

A novel self-heterodyning optical waveguide beam forming and steering network (BFN) integrated on a Lithium Niobate (LN) substrate is introduced to reallize optically controlled active phased array antennas. This integrated LN-BFN can simultaneously control eight array elements and is demonstrated for the first time. The key component in the self-heterodyning system, an optical frequency shifter (OFS), is composed of phase and amplitude-balanced four parallel optical phase modulators. An optical signal processing circuit equipped with a weighted electrode structure simplifies the beam steering operation. A fully integrated LN-BFN connected by optical fibers can steer beam direction with the sensitivity of 1.5 degrees per volt.

❑ Return to main document.