Abstracts

A Coherent Optically Controlled Phased Array Antenna System

P.M. Freitag and S.R. Forrest. "A Coherent Optically Controlled Phased Array Antenna System." 1993 Microwave and Guided Wave Letters 3.9 (Sep. 1993 [MGWL]): 293-295.

A true-time delay, optically controlled phased array antenna system whereby a large number (100-2500) of antenna elements can receive a series of microwave delays via use of a coherent optical carrier signal is described. Both transmit and receive antenna arrays are described, and the signal-to-noise ratio for a 128 channel system is calculated to be ~40 dB with an optical link loss of only ~3 dB for a 1 GHz instantaneous bandwidth at a wavelength of lambda = 1.55 µm. It is shown that the use of coherent optically controlled phased array antennas provide improved controllability and immunity from noise and system losses over other architectures currently being investigated.

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