Abstracts

Novel Optical Control Techniques for Solid-State Radar Transmitters

R.A. Kiehl. "Novel Optical Control Techniques for Solid-State Radar Transmitters." 1980 Transactions on Microwave Theory and Techniques 28.4 (Apr. 1980 [T-MTT]): 409-413.

New optical techniques for performing the RF control functions needed for such applications as short-pulse and phased-array radar transmitters are described and demonstrated. The techniques utilize optical signals to directly control the internal operation of a solid-state oscillator by the photoexitation of carriers within the active region of the oscillator. Short RF pulse generation is achieved by making use of the subnano-second optical power rise time of a laser diode to rapidly quench the RF output of a microwave oscillator. Phase control of a microwave oscillator is achieved by a phase-locked-loop (PLL) scheme wherein the loop is completed by an optical signal that directly controls the output frequency.

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