Abstracts

Optically Controlled Oscillators for Millimeter-Wave Phased-Array Antennas

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A new approach for the design of optically synchronized millimeter-wave local oscillators based on a subharmonically injection-locked phase-lock-loop technique is introduced. The experimental results support the desired goal of frequency and phase coherency, phase shift control of millimeter-wave oscillators, and self-oscillating mixing to downconvert a millimeter-wave RF signal. Experimental results and theoretical analysis show the advantages of the proposed approach: larger locking range of two subharmonically locked oscillators, lower FM noise degradation, and smaller phase error caused by frequency detuning.

❑ Return to main document.