Abstracts

A Fabry-Perot scanning receiver for microwave signal processing

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A scanning receiver with a bandwidth of 40 GHz has been demonstrated. The system uses temporal scanning of a fiber Fabry-Perot etalon to analyze the microwave sidebands on an optical carrier. A proof-of-concept system has been measured, and a conversion efficiency of 280 mV/mW has been obtained at 10 GHz, giving an unamplified RF sensitivity of -2 dBm. The RF resolution is 90 MHz within the 40-GHz scan range. A theoretical analysis of the system is presented and improvements and limitations are discussed. While the performance of the initial all-optical system is not comparable to high-performance microwave receivers, it is believed that the potential for system improvements exists.

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