Abstracts

A low-cost uniplanar sampling down-converter with internal local oscillator, pulse generator, and IF amplifier

J.S. Lee and C. Nguyen. "A low-cost uniplanar sampling down-converter with internal local oscillator, pulse generator, and IF amplifier." 2001 Transactions on Microwave Theory and Techniques 49.2 (Feb. 2001 [T-MTT]): 390-392.

In this paper, we report on the development of a new integrated-circuit sampling down-converter having its own pulse generator, local oscillator (LO), and IF amplifier. The internal pulse generator uses a step recovery diode together with a unique ultra-wide-band hybrid junction to generate sub-nanosecond balanced pulses for gating the sampling diodes. The down-converter exhibits a conversion gain from 12 to 15.5 dB over an RF frequency of 0.01-3 GHz with 10-MHz LO and sampling pulses of about 100 ps. Return loss at the RF port is better than 15 dB over this RF bandwidth. The down-converter exhibits a good linearity and low harmonic levels. This down-converter employs a coplanar waveguide and slot line to make the entire circuit uniplanar and is, thus, suitable for low-cost production. In addition, if has an internal pulse generator, LO, and IF amplifier, making it a compact receiver subsystem, which can readily be used in many microwave systems.

❑ Return to main document.