Abstracts

A High-Performance, Miniaturized X-Band Active Mixer for DBS Receiver Application with On-Chip IF Noise Filter (Short Papers)

R. Michels, P. Wallace, R. Goyal, N. Scheinberg and M. Patel. "A High-Performance, Miniaturized X-Band Active Mixer for DBS Receiver Application with On-Chip IF Noise Filter (Short Papers)." 1990 Transactions on Microwave Theory and Techniques 38.9 (Sep. 1990 [T-MTT] (Special Issue on Multifunction MMIC's and their System Applications)): 1249-1251.

This paper describes a GaAs monolithic microwave integrated circuit (MMIC) dual-gate FET active mixer at X-band that is designed for direct broadcast satellite (DBS) applications. All the components of the mixer, including biasing circuitry, RF, LO, and IF matching networks, as well as the IF noise filter, were implemented monolithically into a 25 mil x 30 mil area. The design was process tolerant, and layout was compact for manufacturability and low cost. The mixer was integrated monolithically into a complete single-chip DBS low-noise block (LNB) converter. The active mixer discussed here has a conversion gain of 5.5 dB and a single-sideband noise figure of 8.5 dB. The circuit was manufactured using a 0.5 µm gate length, buried p- depletion mode MESFET process without substrate-through via holes.

❑ Return to main document.