Abstracts

A new direct millimeter-wave six-port receiver (Dec. 2001 [T-MTT])

S.O. Tatu, E. Moldovan, K. Wu and R.G. Bosisio. "A new direct millimeter-wave six-port receiver (Dec. 2001 [T-MTT])." 2001 Transactions on Microwave Theory and Techniques 49.12 (Dec. 2001 [T-MTT] (Special Issue on 2001 International Microwave Symposium)): 2517-2522.

A new direct-conversion wide-band (23-31 GHz) six-port receiver is proposed suitable for millimeter-wave integrated system design. This new hardware receiver is found to be robust, rugged, low cost, and suitable for use in broad-band wireless mass-market QPSK communications. The prototype circuits are fabricated to validate this new concept with our miniaturized hybrid microwave integrated-circuit technology and the proposed receiver topology is also suitable for monolithic-microwave integrated-circuit fabrication. This application-specific integrated receiver is designed on the basis of a wide-band six-port junction and other analogical circuits in the form of a simple multichip module. Bit-error-rate measurements and simulation results are shown and discussed in the presence of noise, adjacent signal interference, local-oscillator (LO) phase shift, and LO phase noise. The maximum bit rate is fundamentally limited by the speed of the video and decoder circuits. Nevertheless, several hundred megabits per second can be achieved at low cost.

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