Abstracts

Ka-band direct digital receiver using 0.25 /spl mu/m GaAs PHEMTs

S. Ovidiu Tatu, E. Moldovan, G. Brehm, Ke Wu and R.G. Bosisio. "Ka-band direct digital receiver using 0.25 /spl mu/m GaAs PHEMTs." 2002 Radio Frequency Integrated Circuits (RFIC) Symposium 02. (2002 [RFIC]): 155-158.

A new direct conversion wideband (26 GHz - 28.5 GHz) six-port millimeter wave receiver using MMIC technology is proposed to meet the needs of mass-market wireless communications. This six-port receiver is designed to operate without the need for precise power reading and the use of digital signal processor (DSP) that is usually required in other receivers. The proposed receiver architecture is chosen to satisfy requirements of hardware receiver used in QPSK communications. The receiver contains one MMIC module consisting of a wide band six-port junction with four RF Schottky detectors, a receiver front-end and a base hand module composed of video amplifiers and I&Q decoder. The maximum bit rate, at least 100 Mbs, is determined solely by the limiting speed of ancillary video amplifiers and analogue decoder. This new hardware receiver is proposed as a robust, rugged, low cost receiver for use in wide Ka-band wireless mass market QPSK communications such as LMDS services that are a prime example of communication equipment requiring such receivers. BER results are presented in the presence of noise and local oscillator (LO) phase shift.

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