Abstracts

Ka-band direct digital receiver

S.O. Tatu, E. Moldovan, G. Brehm, Ke Wu and R.G. Bosisio. "Ka-band direct digital receiver." 2002 Transactions on Microwave Theory and Techniques 50.11 (Nov. 2002 [T-MTT] (Mini-Special Issue on the 2002 IEEE Radio Frequency Integrated Circuit (RFIC) Symposium)): 2436-2442.

A new direct-conversion wideband (26-28.5 GHz) six-port receiver is proposed for mass-market wireless communications. This six-port receiver is designed to operate without the need for precise power reading and the use of a digital signal processor that is usually required in other receivers. The proposed receiver architecture is chosen to satisfy requirements of hardware receivers used in high-speed QPSK communications. The receiver contains a receiver front-end, QPSK demodulator, and carrier recovery module. A reverse modulation loop was used to provide a rapid carrier recovery. The maximum bit rate is determined solely by the limiting speed of the baseband module. 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 local multipoint distribution system services, which is a prime example of communication equipment requiring such receivers. Bit-error-rate results are presented versus the noise and reference signal phase shift.

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