Abstracts

Effects of Amplitude, Phase, and Frequency Imperfections on the Performance of a Direct Conversion Receiver (DCR) for Personal Communication Systems

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Results from a practical study of a direct conversion receiver (DCR) and its subsections, namely, power splitter, branch coupler hybrid, coupled lines band-pass filter, low-pass filter, balanced mixer, and oscillator, are presented. The receiver is designed for the 2-GHz frequency band, with particular reference to personal communications terminals for the digital european cordless telecommunications (DECT) standard. The DCR overall performance, based on measured figures of individual subcircuits, is analyzed with the aid of the "Eesof-Omnisys" simulator. Typical value for the signal-to-noise ratio 12 dBm for 10/sup -3/ bit-error rate. The receiver can tolerate amplitude and phase mismatches of 3% and 5°, respectively, as well as 1.2-kHz local oscillator drift. The dynamic range is 80 dB. The performance of the DCR fits well with the DECT specification.

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