

# Abstracts

## A monolithic even harmonic quadrature mixer using a balance type 90 degree phase shifter for direct conversion receivers (1998 [RFIC])

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*M. Shimozawa, K. Kawakami, H. Ikematsu, K. Itoh, N. Kasai, Y. Isota and O. Ishida. "A monolithic even harmonic quadrature mixer using a balance type 90 degree phase shifter for direct conversion receivers (1998 [RFIC])." 1998 Radio Frequency Integrated Circuits (RFIC) Symposium 98. (1998 [RFIC]): 209-212.*

This paper proposes a novel circuit configuration of an even harmonic quadrature mixer (EHQMIX) for direct conversion receivers. In this EHQMIX, a 90 degree phase shifter consists of balance type high pass and low pass filters, and it does not require any circuits connecting to the ground plane. So this configuration is suitable for low cost monolithic IC without any via-holes, because amplitude and phase imbalance caused by inductance included in wires and leads of a package for circuits to the ground plane can be reduced. A developed L-band MMIC achieves good quadrature detecting characteristics.

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