Abstracts

A monolithic, 2 to 18 GHz upconverter

L.M. Devlin, A.W. Dearn, G.A. Pearson, P.D.L. Beasley and G.D. Morgan. "A monolithic, 2 to 18 GHz upconverter." 2002 MTT-S International Microwave Symposium Digest 02.1 (2002 Vol. I [MWSYM]): 257-261 vol.1.

This paper describes the design and evaluation of an upconverter IC for Electronic Surveillance Measures (ESM) applications. The purpose of the IC is to enable a signal anywhere in the 2-18GHz frequency band to be converted to 21-23GHz for subsequent downconversion to an IF suitable for digitisation. The required LO range is 23-41GHz. The RF, LO and IF ports of the IC are all single ended but the internal mixer is balanced at all ports and single-ended to differential conversion is realised on-chip, using novel broadband active and passive balun structures. The IC has been fabricated on the Triquint Semiconductor Texas' 0.25/spl mu/m PHEMT process and has a measured conversion loss of 7dB to 14GHz, rising to 10dB by 18GHz. Input return loss is better than 12dB from 2 to 18GHz and LO rejection is over 30dB.

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