Abstracts

Fundamental limitations on output power and conversion loss of an even harmonic mixer in an up-conversion operation

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An even harmonic mixer (EHM) with an antiparallel diode pair (APDP) is an effective technique for low spurious transmitters especially in millimeter-wave. The purpose of this study is to clarify general properties of the EHM in an up-conversion operation. For this purpose, fundamental formulas and universal charts are indicated in this paper. As results of the analysis, it becomes clear that output power can be increased and spurious emissions can be reduced in the case of higher LO level. Furthermore conversion loss limitation of 3.9 dB is indicated for the EHM with a resistive termination. Measured results indicate good agreements with presented formulas.

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