Abstracts

Unbalance effects of an antiparallel diode pair on the virtual local leakage in an even harmonic mixer

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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 the millimeter-wave region, since APDP can suppress the virtual LO leakage that locates nearby a desired RF signal. The purpose of this study is to clarify unbalance effects of an APDP on the virtual local leakage. For this purpose, fundamental formulas are indicated in this paper. As a result of the analysis, two conclusions are given: (a) due to unbalance on parasitic resistance of the APDP, the virtual LO leakage is increased by increment of LO power; (b) due to unbalance on built-in voltage of the APDP, the virtual LO leakage is decreased by increment of LO power. Measured results indicate good agreement with presented formulas.

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