Abstracts

FET Up-Converter Design Using Load-Dependent Mixing Transconductance

J.L. Fikart and J.L.M. Lord. "FET Up-Converter Design Using Load-Dependent Mixing Transconductance." 1989 Transactions on Microwave Theory and Techniques 37.6 (Jun. 1989, Part I [T-MTT]): 1033-1039.

A new method for a more accurate prediction of FET up-converter gain has been developed. The method uses an equivalent circuit containing a conversion current source at the upper and lower sideband output frequency. The magnitude of the current is related to the IF input voltage by the mixing transconductance factor, which is not a constant but a function of internal LO voltages in the FET. These in turn depend on the output load impedance at the LO frequency. With this approach, we can optimize the output network for acceptable match at the selected sideband and for desired LO signal rejection, while avoiding those impedance values in the LO frequency range that have been observed to cause severe degradation in conversion gain.

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