Abstracts

Multitone characterization and design of FET resistive mixers based on combined active source-pull/load-pull techniques

Di-Luan Le and F.M. Ghannouchi. "Multitone characterization and design of FET resistive mixers based on combined active source-pull/load-pull techniques." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1201-1208.

A dual six-port-based measurement setup was developed to synthesize five source and load impedances simultaneously. The setup can perform nonlinear measurements with multifrequency excitation. Active source-pull/load-pull measurements obtained for an NE-9001 transistor operated in a C-band field-effect transistor (FET) resistive mixer mode allow one to optimize the linearity of the mixer while maintaining a typical conversion loss of approximately 7 dB. Two-tone verification at 3.9000 and 3.9005 GHz showed that the level of in-band third-order intermodulation products could be reduced to -50 dBc, with a well-chosen output intermediate frequency (IF) load impedance and sufficient local oscillator (LO) power. The measured performance of the realized mixer is in good agreement with that predicted at the transistor characterization step of the design.

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