Abstracts

11-GHz GaAs Power MESFET Load-Pull Measurements Utilizing a New Method of Determining Tuner Y Parameters

H. Abe and Y. Aono. "11-GHz GaAs Power MESFET Load-Pull Measurements Utilizing a New Method of Determining Tuner Y Parameters." 1979 Transactions on Microwave Theory and Techniques 27.5 (May 1979 [T-MTT] (Special Issue on Solid-State Microwave/Millimeter-Wave Power Generation, Amplification, and Control)): 394-399.

A Ioad-pull technique utilizing a new method of determining tuner Y parameters is proposed for huge-signal characterization of microwave power transistors. Large-signal input-output transfer characteristics of an active circuit containing a GaAs FET and an input matching circuit are measured by inserting a microstrip tuner between the active circuit output drain terminal and the 50-Omega load. The microstrip-tuner Y parameters are determined by comparing the dc bias-dependent small-signal S parameter S/sub 22/ of the active circuit and that of the circuit which contains the active circuit and microstrip tuner. The reflection coefficient presented to the active circuit output drain terminal is derived from tuner Y parameters. Optimal load impedances for output power, obtained with this new Iload-pull technique, are used to design X-band GaAs FET power amplifiers. An 11-GHz power amplifier with a 3000-mu m gate-width FET chip delivers 1-W microwave power output with 4-dB gain in the 500-MHz band.

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