Abstracts

Transfer characteristic of IM/sub 3/ relative phase for a GaAs FET amplifier (Dec. 1997, Part II [T-MTT])

N. Suematsu, Y. Iyama and O. Ishida. "Transfer characteristic of IM/sub 3/ relative phase for a GaAs FET amplifier (Dec. 1997, Part II [T-MTT])." 1997 Transactions on Microwave Theory and Techniques 45.12 (Dec. 1997, Part II [T-MTT] (1997 Symposium Issue)): 2509-2514.

The transfer characteristic of relative phase of the third-order intermodulation distortion (IM/sub 3/) of a GaAs FET amplifier is measured and analyzed. The measurement system and method are also described. For drives in the weakly nonlinear region, the measured relative phase of IM/sub 3/ is equal to that of the carrier and is in agreement with the analysis results using Volterra-series representation. For drives in the saturation region, the measured relative phase of IM/sub 3/ versus the input power moves drastically compared with that of the carrier and is in agreement with numerical analysis using discrete Fourier transform. Comparison between measured and analytical results shows the drastic move of IM/sub 3/ relative phase is caused by the generation of IM/sub 3/ due to AM-PM conversion. The measured results and the measurement method are useful for the design and adjustment of predistortion-type linearizers for GaAs FET high-power amplifiers.

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