Abstracts

Effects of Nonlinear Distortion on CDMA Communication Systems (Dec. 1996, Part II [T-MTT])

S.-W. Chen, W. Panton and R. Gilmore. "Effects of Nonlinear Distortion on CDMA Communication Systems (Dec. 1996, Part II [T-MTT])." 1996 Transactions on Microwave Theory and Techniques 44.12 (Dec. 1996, Part II [T-MTT] (1996 Symposium Issue)): 2743-2750.

We report a rigorous approach to analyze the effects of nonlinear distortion on code division multiple access (CDMA) wireless communication systems based on time-domain analysis and band-pass nonlinearity theory. Given AM-AM and AM-PM characteristics of a nonlinear device, this technique is capable of predicting adjacent channel power rejection (ACPR), noise power ratio (NPR), two-tone intermodulation products, CDMA waveform quality, and baseband signal vector constellation at the output of the nonlinear device. To demonstrate and verify the capability of this technique, an L-band power amplifier was designed, built, tested with CDMA waveforms, and compared with the simulated results. Excellent agreement between the measured and predicted results has been achieved.

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