Abstracts

A controllable phase coherent pulsed RF signal generator for microwave network analyzer measurements

P. Vael and Y. Rolain. "A controllable phase coherent pulsed RF signal generator for microwave network analyzer measurements." 1999 Transactions on Microwave Theory and Techniques 47.12 (Dec. 1999 [T-MTT] (Special Issue on 1999 International Microwave Symposium)): 2605-2612.

In this paper, a method is proposed to build a phase coherent modulated radio-frequency (RF) signal with high modulation depth, which can be used as an excitation signal for nonlinear pulsed-RF network analyzer measurements. The source consist of an RF carrier modulated by an arbitrary waveform generator whose sampling clock is phase coherent to the carrier. A software feedback technique is used to eliminate spurious modulation harmonics and to correct the amplitude and phase distortions in the IF signal path. This technique allows to create a modulated excitation signal with a known modulation spectrum (in amplitude and phase). Such a "controlled modulation" signal is required to fully characterize a device-under-test under noncontinuous wave (modulated or pulsed) test conditions with a sampling downconvertor. The measurement of a controlled pulsed-RF spectrum shows the obtained performance (the modulation bandwidth is limited to 4 MHz at this moment).

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