Abstracts

Nonlinear analysis of a microwave fractional synthesizer

S. Sancho, J. Chuan and A. Suarez. "Nonlinear analysis of a microwave fractional synthesizer." 2002 MTT-S International Microwave Symposium Digest 02.3 (2002 Vol. III [MWSYM]): 2185-2188 vol.3.

In this work, the nonlinear analysis of a fractional phase-locked loop with 2.4 GHz output frequency is presented. The nonlinear simulation uses a realistic description for the phase-frequency detector and the loop filter. The phase-error compensation for beat-note spurious reduction is analyzed, predicting the attenuation values for practical and theoretically improved compensation signals. The influence of different loop parameters on the beat note spurious is also studied, through the application of the Poincare map. This technique has also enabled the determination of the phase-locked ranges, delimited by chaotic phenomena. The phase-locked loop has been manufactured and experimentally characterized.

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