Abstracts

Analysis and optimization of grid oscillators

W.A. Shiroma and Z.B. Popovic. "Analysis and optimization of grid oscillators." 1997 Transactions on Microwave Theory and Techniques 45.12 (Dec. 1997, Part II [T-MTT] (1997 Symposium Issue)): 2380-2386.

A method for assessing and optimizing the feed-back level in a transistor-grid oscillator is presented. Based on the approximate large-signal S-parameters of the transistor, an equivalent circuit model for the grid is synthesized for maximum oscillator power. The resulting circuit serves as a convenient benchmark for determining the level of feedback for a given grid, Experimental results are presented for five different grid oscillators covering S through Ka bands. By varying the substrate thickness and metallization pattern of the grid, the feedback can be optimized in accordance with the theory. A grid with an asymmetric unit cell is shown to deliver almost 60% more effective radiated power (ERP) than a grid with a symmetric unit cell.

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