Abstracts

Input Conductance of a Four-Frequency Parametric Up-Converter

A. Korpel and V. Ramaswamy. "Input Conductance of a Four-Frequency Parametric Up-Converter." 1965 Transactions on Microwave Theory and Techniques 13.1 (Jan. 1965 [T-MTT]): 96-106.

The limited power gain of a parametric upper sideband up-converter may be enhanced arbitrarily by allowing additional dissipation of energy at the lower sideband. However, the input conductance of such a four-frequency device will be critically dependent upon the amount of lower sideband energy dissipated. In this paper, we shall consider a varactor diode-type four-frequency up-converter employing a single resonant circuit common to both the pump and the sidebands. The input conductance of this configuration is analyzed in terms of the relative deviation of the pump frequency from the resonance frequency of the common circuit. We show that the input conductance also is seriously affected by the presence of second harmonic capacitance variation such as may occur at high-pump levels. Numerical results have been plotted for a wide range of circuit parameters. Also presented in this paper are the experimental results of measurements performed on such an amplifier, showing good agreement with the theory.

❑ Return to main document.