# Abstracts

## Large Signal Effects in Parametric Amplifiers (Correspondence)

*H.E. Brenner. "Large Signal Effects in Parametric Amplifiers (Correspondence)." 1967 Transactions on Microwave Theory and Techniques 15.2 (Feb. 1967 [T-MTT]): 118-119.*

It is well known that a change in pump power level usually causes a severe slope in the gain versus frequency characteristics of a parametric amplifier. A gain peak moves toward the higher end of the signal frequency band when the pump power level is increased. This is due to the increase in average capacitance of the diode with increasing the pump power level, causing a decrease in the resonant frequency of the idler circuit, To minimize this gain slope, sometimes a self bias is super-imposed onto the fixed bias of the diode to cancel the change in average capacitance. This technique is successful in minimizing the effect of pump power variation on the gain slope. However, under large signal conditions (output power>-12 dBm), the average capacitance of the diode is also changed by the input signal level. Since the rectified diode current due to the large signal is much larger than that due to the pump for the same change in average capacitance, an optimum compensation bias resistance for pump power variation is too large for signal power variation. This results in an overcompensation and causes a large opposite gain slope.

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