# Abstracts

## A high-power fixed-tuned millimeter-wave balanced frequency doubler

*D.W. Porterfield, T.W. Crowe, R.F. Bradley and N.R. Erickson. "A high-power fixed-tuned millimeter-wave balanced frequency doubler." 1999 Transactions on Microwave Theory and Techniques 47.4 (Apr. 1999 [T-MTT]): 419-425.*

We report on the design and evaluation of a 40-80-GHz (40/80-GHz) high-power wide-band fixed-tuned balanced doubler. The active device is a single GaAs chip comprising a linear array of six planar Schottky varactors. The varactors and a quartz microstrip circuit are embedded in a split waveguide block. We have achieved a measured 3-dB fixed-tuned bandwidth of 17% and measured flange-to-flange peak efficiency of 48% at an input-power level of 200 mW. The doubler operates at near-peak efficiency (45%) at an input power of 250 mW. We have cooled the block to 14 K and achieved an efficiency of 61% at an input-power level of 175 mW and an efficiency of 48% at an input-power level of 365 mW. Emphasis has been placed on making the design easy to fabricate and scalable to higher frequencies.

❑ Return to main document.