

## A Monolithic $K/\text{sub } A/\text{-Band}$ Sub-Harmonically Pumped Frequency Converter

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A GaAs monolithic Sub-harmonically Pumped (SHP) Ka-band frequency converter has been developed. The complete frequency converter Monolithic Millimeter-wave Integrated Circuit (MMIC), having six microwave ports, consists of an SP2T RF switch, LO buffer amplifier, anti-parallel diode mixer, 3-stage IF amplifier, and SP3T IF switch. To minimize circuit cost, the converter was fabricated with conventional MMIC material and processing. The frequency converter exhibited a conversion gain of 8 dB and a single sideband noise figure of 20dB. This Integrated Circuit (IC) is the first demonstrated monolithic Ka-band SHP frequency converter and has a higher level of integration than previous MMIC SHP mixers.

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