Abstracts

A Wideband, Backshort-Tunable Second Harmonic W-Band Gunn-Oscillator

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Today W-Band (75...110 GHz) Gunn-oscillators are mostly built as 2nd harmonic oscillators. Because the fundamental frequency is below cutoff of the waveguide system, a backshort affects the output frequency only slightly. For the same reason, power combining and varactor tuning is extremely difficult. This paper presents design and performance of a more than 15 GHz backshort tunable 2nd harmonic 90 GHz oscillator. Using a common waveguide cavity, designed for both the fundamental and the 2nd harmonic frequency, this oscillator is easily backshort and varactor tunable. It is also well suited for "in line" power combiners. Results for a three diode combiner are given. Finally, a varactor tuned 2 diode combiner with a tuning range of 1.5 GHz is presented.

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