

# A 664 GHz Sub-Harmonic Schottky Mixer

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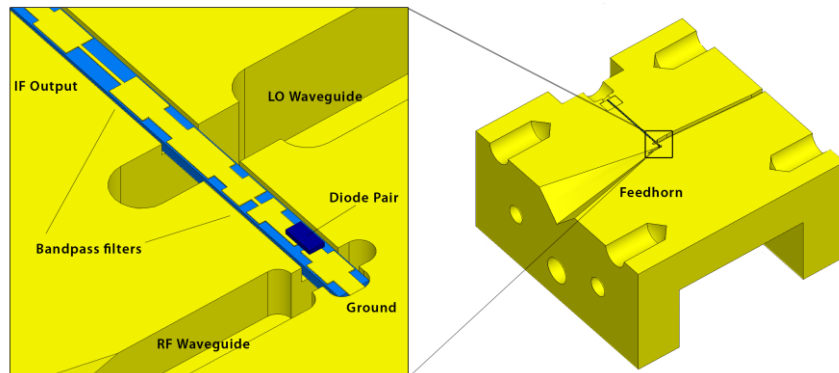
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## Abstract

This paper presents the design and simulation of a novel fixed-tuned sub-harmonic mixer operating at a central frequency of 664 GHz. The mixer is based on a discrete anti-parallel pair of Schottky diodes fabricated at the STFC Rutherford Appleton Laboratory and flip-chip mounted onto a quartz based microstrip circuit. A double-sideband conversion loss of better than 10 dB is simulated with 4.2 mW of local oscillator power across an RF range of 650-690 GHz, with a minimum of 8 dB at 663 GHz.

The Following is a 3d model of the mixer block complete with integrated diagonal feedhorn.



Simulated performance is shown in the graph below and experimental results will be presented at the symposium.

