Towards a THz Sideband Separating Subharmonic Schottky Mixer

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Today GaAs Schottky mixers with state of the art planar submicron diodes are used for THz-detection up to 3 THz [1]. GaAs Schottky diodes can operate in room temperature which makes them good candidates for space applications and an interesting low cost alternative to low noise cryogenic SIS and HEB technologies.

To our knowledge this is the first time a sideband separation mixer [2] using subharmonic Schottky mixers is presented. We will present the current status of the development of a novel sideband separating receiver topology operating at 340 GHz, see Fig1. The design of a subharmonic mixer and the LO and RF waveguide hybrids will be presented followed by an account of measured S-parameters and mixer noise temperature.

Fig1. Schematic of the sideband separation mixer (left) and modular assembly (right).
