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Critical components in 0.14 THz communication systems

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(Submitted on 13 Apr 2012)

In the super-heterodyne terahertz communication system, the proper design of the critical components like mixers and filters are of great importance for enhancing its performance. In this work, some issues on our newly developed system setup design for 0.14 THz wireless communications and the key components subharmonic mixer (SHM) based on Schottky diode, as well as silicon micromachined bandpass rectangular waveguide filters are presented. According to ADS simulation, the optimum conversion loss of the 140 GHz SHM is 26 dB. And the silicon-micromachined rectangular waveguide filters have been fabricated and the measured lowset insertion losses are lower than 0.5 dB.

Comments: 4 pages, 5 figures, 2012 IEEE International Workshop on Microwave and Millimeter Wave Circuits and System Technology
Subjects: **Instrumentation and Detectors (physics.ins-det)**
Journal reference: 2012 IEEE International Workshop on Microwave and Millimeter Wave Circuits and System Technology
Cite as: [arXiv:1204.3014v1](https://arxiv.org/abs/1204.3014v1) [physics.ins-det]

Submission history

From: Guangcun Shan [[view email](#)]
[v1] Fri, 13 Apr 2012 14:45:12 GMT (513kb)

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