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Title: Experimental research on resolution measurement of a continuous-wave terahertz reflection-mode scanning system

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Abstract: Spatial resolution is an important technical parameter for terahertz (THz) imaging system. To measure the resolution characteristic of the imaging system, a Siemens star for resolution measurement is prepared according to ISO 12233. By imaging the Siemens star, multidirectional square wave response for different spatial frequencies can be deduced from the imaging results, thus obtaining the system's modulation transfer function (MTF). Resolution measurement experiment based on the Siemens star is carried out on a THz reflection-mode scanning imaging system. The system's resolution capability is measured and analyzed. The measurement result shows that the system's resolution is 1.273 lp/mm, and the resolvable line width is 0.393 mm, which is consistent with the measurement result by knife edge method. The study demonstrates that the Siemens star offers a convenient approach to measure the system's imaging resolution capability. The system's resolution upper limit can be obtained precisely and directly.

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