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Title:Experiment on 2.52 THz transmission-mode imaging for concealed objects
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Abstract: Terahertz (THz) imaging has the advantage that the THz radiation can penetrate most nonmetal and nonpolar materials for concealed objects detection, while it is harmless to organism. The penetration ability for common packaging materials and clothes thus become very important to evaluate a THz imaging system. In the paper, penetration experiments are carried out by use of a 2.52-THz transmission-mode scanning system. The system is constructed based on a CO2 laser pumped THz laser. The imaging targets are razor blade, penciled character, banknote, and plastic bottle cap. Paper, paper envelope, and lab gown are used as shelters, and the imaging results are compared and analyzed. The experimental results demonstrate that the system can image through 13 pieces of A4 paper, 2 layers of lab-gown, or 2 layers of paper envelope. The maximum attenuation approaches 50 dB.
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