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标题: Experimental comparison of terahertz and infrared data signal attenuation in dust clouds
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摘要: In order to study and compare propagation features of terahertz (THz) links with infrared (IR) links under different weather conditions such as turbulence, fog, and dust particles, THz and IR free space communication links at 625 GHz carrier frequency and 1.5 mu m wavelength, respectively, with a maximum data rate of 2.5 Gb/s have been developed. After propagating through the same channel perturbation caused by dust, attenuation of the carrier frequencies by dust as well as scintillation effects on both channels are analyzed by measuring the power attenuation and bit error rates. Attenuation by the presence of dust degrades the IR channel but exhibits almost no measurable impact on the THz signal. Numerical simulations of THz attenuation with different dust concentrations are presented and agree with the measured results.

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