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Accession number:13136279 Title:Terahertz single-shot quadrature phase-shifting interferometry Authors:Fo¨Idesy, P. (1) Author affiliation:(1) Comput. & amp; Autom. Res. Inst., Budapest, Hungary Source title:Optics Letters Abbreviated source title:Opt. Lett. (USA) Volume:37 Issue:19 Publication date:1 Oct. 2012 Pages:4044-6 Language:English ISSN:0146-9592 CODEN:OPLEDP Document type: Journal article (JA) Publisher:Optical Society of America Country of publication:USA Material Identity Number: EV60-2012-008

Abstract: A single-shot quadrature phase-shifting interferometry architecture is presented that is applicable to antenna coupled detector technologies. The method is based on orthogonally polarized object and reference beams and on linear and circular polarization sensitive antennas in space-division multiplexing. The technique can be adapted to two-, three-, and four-step and Gabor holography recordings. It is also demonstrated that the space-division multiplexing does not necessarily cause sparse sampling. A sub-THz detector array is presented containing multiple on-chip antennas and FET plasma wave detectors implemented in a 90 nm complementary metal-oxide semiconductor technology. As an example, two-step phase-shifting reconstruction results are given at 360 GHz.

Number of references:11

Inspec controlled terms:antennas - CMOS integrated circuits - field effect transistors - holographic interferometry - integrated optics - light polarisation - phase shifting interferometry - quadrature phase shift keying - space division multiplexing - terahertz wave spectra

Uncontrolled terms:terahertz single-shot quadrature phase-shifting interferometry - antenna-coupled detector technology - orthogonally-polarized object - reference beams - linear polarization sensitive antenna - circular polarization sensitive antenna - space-division multiplexing - Gabor holography recording - multiple on-chip antennas - FET plasma wave detectors - complementary metal-oxide semiconductor technology - two-step phase-shifting reconstruction - frequency 360 GHz - size 90 nm

Inspec classification codes:A4240K Holographic interferometry; other holographic techniques -A4282 Integrated optics - A4285F Optical testing techniques - A0760L Optical interferometry -B4350 Holography - B5270 Antennas - B7310N Microwave measurement techniques - B2570D CMOS integrated circuits - B4140 Integrated optics

Numerical data indexing: frequency 3.6E+11 Hz;size 9.0E-08 m

Treatment: Theoretical or Mathematical (THR); Experimental (EXP)

Discipline: Physics (A); Electrical/Electronic engineering (B)

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