239. Accession number:20123015271179
Title:Laser power-meter comparison at far-infrared wavelengths and terahertz frequencies
Authors:Lehman, John (1); Dowell, Marla (1); Popovic, Nina Basta (2); Betz, Kerry (3); Grossman, Erich (1)
Author affiliation:(1) National Institute of Standards and Technology, Boulder, CO 80305, United States; (2) Department of Electrical and Computer Engineering, McGill University, QC, H3A 0G4, Canada; (3) Department of Mathematics, California Institute of Technology, Pasadena, CA 91125, United States
Corresponding author:Lehman, J.(lehman@boulder.nist.gov)
Source title:Metrologia
Abbreviated source title:Metrologia
Volume:49
Issue:4
Issue date:August 2012
Publication year:2012
Pages:583-587
Language:English
ISSN:00261394
E-ISSN:16817575
CODEN:MTRGAU
Document type:Journal article (JA)
Publisher:Institute of Physics Publishing, Temple Circus, Temple Way, Bristol, BS1 6BE, United Kingdom
Abstract:We have evaluated the responsivity of seven different thermal detectors compared to an electrically calibrated photoacoustic reference detector at 119m (2.5THz) and 394m (0.76THz) laser wavelengths. Among the thermal detectors is an electrically calibrated thermopile having a vertically aligned carbon nanotube array as the absorber. We document the uncertainty contributions attributable to the photoacoustic reference detector along with a definition of a calibration factor based on the measurement protocol. The expanded relative uncertainty (k=2) and a calibration factor of each detector are tabulated. © 2012 BIPM & IOP Publishing Ltd.
Number of references:5
Main heading:Detectors
Controlled terms:Calibration - Thermopiles - Uncertainty analysis
Uncontrolled terms:Calibration factors - Electrically calibrated thermopile - Far-infrared - Laser wavelength - Measurement protocol - Relative uncertainty - Responsivity - Terahertz frequencies - Thermal detectors - Vertically aligned carbon nanotube
Classification code:944.5 Temperature Measuring Instruments - 944 Moisture, Pressure and Temperature, and Radiation Measuring Instruments - 943 Mechanical and Miscellaneous Measuring Instruments - 942 Electric and Electronic Measuring Instruments - 941 Acoustical and Optical Measuring Instruments - 922.1 Probability Theory - 914 Safety Engineering
DOI:10.1088/0026-1394/49/4/583
Database:Compendex