

MEASUREMENT SYSTEM FOR CHARACTERIZATION OF ANGULAR AND SPECTRAL DISTRIBUTION OF LED BASED SOURCES.

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In the present days light emitting diodes (LED) based light sources become very common in most areas of life and scientific applications. Due the nature characteristic of the LED's, angular and spectral distribution of the emitted light must be improved for specific purpose of light source. It could be done by standard bulk optics, reflective and refractive, or modern way by integrating planar diffractive structures. We developed a system measuring spatial distribution of illumination, which could be used in general but with advantage mainly for improved progressive diffraction optics components. The measurement system consists from three main parts. The first one is rigid optical bench with stepper motor driven goniometric source holder, which operates in three degrees of freedom. The source holder has ability to correct thickness of the light source with respect to the plane of the radiation. Maximal size of the light source is 500 by 500 mm and maximal length between the source and detector part is over 3 meters. The second detection part includes fiber spectrometer, photopic photodiode and elevation laser, the latter ensures correct repeatable setting of the light source. The third part - control and acquisition hardware is crucial for proper measurement of spectral and intensity data sets. The whole system is driven by custom software, which is able generate most types of output reports, charts and file formats.

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