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Compact LED Solar Simulator Is Class AAA, Providing More Than One Sun of Total Irradiance

Woburn, MA, April 10, 2014—Innovations in Optics, Inc. introduces the Model 2910A-300 high power, multi-wavelength LED illuminator for testing photovoltaic devices that meets Class AAA solar simulator requirements of IEC 60904-9 for spectral match, uniformity of irradiance, and temporal stability.

The benefits of LED based solar simulators for PV testing as compared to traditional xenon or metal-halide arc lamp based sources are numerous and significant. LEDs are more energy efficient, smaller in size and operate with consistent emission for very long lifetimes leading to low maintenance and cost of ownership. LEDs are instant-on where arc lamps need minutes to warm up. LED solar simulators can be used in multiple modes; continuous, flashed, or pulsed. LEDs are more environmentally friendly by being mercury-free, and they generate no ozone and emit no harmful UV radiation. LEDs are a cool source compared to arc lamps, largely from having no infrared emission. Reduced heat simplifies system cooling mechanisms and preserves materials under irradiation.

The 2910A-300 achieves a spatially uniform illumination field by combining chip-on-board (COB) LED technology with efficient, non-imaging, homogenizing optics and a precision re-imaging lens system. The field of illumination is 5x5 cm at a working distance of 20 cm. The 2910A-300 uses 7 LED spectral bands to cover a spectral range of 400-1100 nm. Total irradiance of 1.1 sun units in the spectral range is provided while operating electrically at 85 Watts.

Primary applications for the 2910A-300 are in terrestrial photovoltaic testing and PV research. The compact light source measures only 10 cm long by 3 cm diameter and is ideally suited for OEM system integration. Multiple units can be combined for illuminating larger areas. System accessories include thermal management devices, wire harnesses, and driver/controllers.

Innovations in Optics, Inc. (IOI), founded in 1993 and located near Boston, is widely recognized as a leading innovator in the areas of high brightness LED chip-on-board (COB) products and

illumination engineering and technology. Leveraging a unique, multidisciplinary approach to systems design, the company pushes the technology envelope to develop industry-leading ultra-high power LED products for industry. IOI light engines and illumination systems feature patented and patent-pending optics which collect, direct and maximize output efficiency and uniformity, enabling some of today's most revolutionary solutions in cutting-edge technical applications for LED light sources.