

**PHOTOBIOLOGICAL
TESTING USING THE
OL SERIES 750 AUTOMATED
SPECTRORADIOMETRIC
MEASUREMENT SYSTEM**

Throughout the world, a new framework is in place for the evaluation of the optical radiation safety of lamps and lamp systems covering non-laser electrically-powered sources emitting light in the spectral region 200-3000nm. Though standards vary between countries, they stem from the same source and as such show a high degree of commonality to the international standard IEC62471:2006.

Faced with a complex series of measurements of spectral irradiance and spectral radiance over wide spectral range, and in response to the recommended measurement instrumentation of IEC62471 (*notably the use of a double monochromator to provide excellent stray light rejection and high spectral resolution wide spectral range*), Optronic Laboratories offers the OL Series 750 Spectroradiometric Measurement System.

Incorporating products from the long-established Optronic Laboratories spectroradiometer and accessories portfolio, plus the introduction of new products designed to meet the specific requirements of these measurements, the OL Series 750 provides an automated measurement solution with full software guidance, calculation and classification.

In consideration of six hazards to the skin and eye, measurements of spectral irradiance are performed over the range 200 - 3000nm and spectral radiance 300 - 1400nm.

At the heart of the system is the OL 750-M-D double spectroradiometer combining:

- Flexibility of turret-mounted diffraction gratings for uninterrupted measurement over a wide spectral range
- Motorized slits to vary instrument bandwidth over the measurement range
- Stray light performance of a double monochromator, a key factor in the UV region
- Integrated DC electronics
- 3 detector ports
- Fully computer-controlled through Windows® application
- USB interface

According to the measured quantity, the appropriate input optic should be used to define the geometry of measurement from which light is coupled into the spectroradiometer.

To measure spectral irradiance, we require an input optic to measure light arriving from the entire hemisphere above the measurement plane. The D7 diffuser, having the exceptionally low cosine error of $f2 < 1\%$, accurately measures this quantity over the range 200 - 1100nm.

To measure spectral radiance, we require an input optic to measure in a given field of view to mimic the imaging function of the human eye. According to the standard, there are three key fields of view, two of which are measured with the TEL309 telescope.

In order to achieve both given field of view and use over the range 200mm to several meters, the TEL309 consists of a motorized relay optic and wheel of apertures with a USB camera viewer for the user to view the FOV.

Accompanying the system is a set of 3 calibration standards, with calibration traceable to NPL, UK, to provide the user with a traceable calibration chain, an important aspect of consideration in accreditation. Guidance is also provided in the determination of source subtense, required in the evaluation of the retinal hazards.

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Application Note: A22 Jan 2019

As part of our policy of continuous product improvement, we reserve the right to change specifications at any time.