ELECTRICAL & ELECTRONICS TESTING SECTION

PHOTOMETRY FOR LAMPS AND LUMINAIRES

SIRIM QAS International has been equipped with the very latest, state-of-the-art equipment for Photometry Testing. Our photometry testing services are based on two main types of measuring equipment, which are Integrating Spheres and Goniophotometer. The Integrating Spheres and Goniophotometer are supported with Photometers and Spectroradiometers.

Photometric Testing Capabilities utilize High-Speed Type A and Type C Mirror - Goniophotometers with 24 meter length room to conduct performance Photometry Testing of various type of lamps and luminaires including LED and traditional lighting sources and fixtures, and offers full spectral radiometric testing capabilities to cover a wide range of UV, Visible, and IR testing needs. The system also support actual based mounting measurements where allowed user to simulate in actual mounting of the samples.

Integrating spheres support both measurements, Absolute Flux Output - Omni-directional Lamps and Absolute Flux Output - Directional Lamps, such as PAR, MR, R-Lamps and LED's.

SIRIM QAS International laboratory provides a comprehensive photometry testing services for testing and measurement on the amount, colour, quality and spatial distribution of light emitted from lamps, LEDs and luminaires. The system are also capable to measure colour temperature and colour rendering as a function of angle. Following a photometric performance evaluation, we produce IESNA and CIE Photometric standard data files in the popular IES format for the architectural design and simulation of lighting design software.

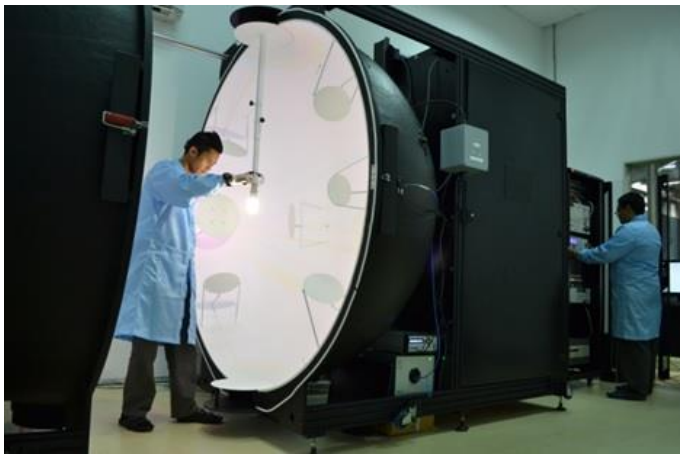
Depending on types of lamps or luminaires and application, we also provide comprehensive test report consisting of Electrical measurements (P, V, A, PF), Luminous Flux (lumens), Lamp or Luminaire Efficacy, Light Output Ratio (LOR), Unified Glare Ratio (UGR), Chromaticity, Correlated Colour (CCT), Colour Rendering Index (CRI), Power Spectral Distribution and many more, including:

- Luminous intensity distribution
- Luminance distribution of lamps, luminaires, displays, background-lit symbols (cd/m2)
- Luminous flux (lm = lumen)
- Utilization factor (η)
- Illuminance (lx = lux)
- Radiant power (W = Watt)
- Color rendering index (Ra-index)
- Color temperature (K= Kelvin)
- Chromatic coordinates (x and y)
- Spectral power distribution curve
- Candela Tabulation
- Polar Candela Plots
- Beam Spread
- Zonal Lumen Output
- Coefficient of Utilization Curves
- Total Efficiency



With photometric measurements, we can investigate the characteristics (e.g. performance and ergonomic aspects) of light sources and lighting installations. These characteristics are very important for example for engineers and architects who are carrying out light planning for rooms or spaces.

SIRIM QAS International carries out measurements of these variables on luminaires for normal use, safety luminaires, incandescent, fluorescent and discharge lamps, control gear for lighting fittings (i.e. electronic terminals) and flat screens. For photometric measurements we use an integrated sphere and a goniophotometer which is based on state-of the-art CCD camera technique. Furthermore we carry out measurements with regard to energy consumption of photometric products and the light output ratio for various luminaires.



Test method covers:

- ☐ IES LM-79-08
- ☐ CIE 121
- ☐ CIE 84
- ☐ IEC 60969
- ☐ IEC 62612
- ☐ IEC 62717
- ☐ IEC 62722 and IEC 62722-2-1
- ☐ BS EN 13032-1

Product covers:

- ☐ Fluorescent lamp, LED lamps and others
- ☐ Luminaires with replaceable lamp
- ☐ Luminaires with built-in/integral light source
- ☐ Roadway luminaires including relative and absolute measurement
- ☐ Aviation light/ Obstruction Lights
- ☐ LED Modules

With the introduction of LED technology into the lighting mainstream, the need for verification of lumen and color performance over time has become necessary for the performance verification of LED lamps and luminaires. Lumen maintenance is the term used to describe the light output performance of lamps and luminaires over time. It is the expression of lumen output at any given time in the life of the product as compares to the initial lumen output when the product was new, and is expressed as a percentage current output to initial output. The requirements for complaince of MEPS for Malaysia, where applicable for lamp to be sold in Malaysia.

User of test data for Malaysian compliance including:

- ☐ Suruhanjaya Tenaga (ST)
- ☐ Public Works Department (JKR)
- ☐ Lembaga Lebuhraya Malaysia (LLM)
- ☐ Department Civil Aviation (DCA)
- ☐ Fire & rescue Department of Malaysia (BOMBA)
- ☐ Tenaga National Berhad (TNB)
- ☐ Local State Authorities, including Dewan Bandaraya Kuala Lumpur (DBKL)



