



Choose certainty.  
Add value.

## Zhaga testing and certification

Your premium, one-stop solution for LED lighting.

### Your challenges

The lighting industry currently makes use of LED modules with new form factors and optimised thermal design in high-performance LED spotlighting applications. These modules are available in many different shapes and light distributions. In addition, many lighting companies make their own mutually incompatible LED modules. This lack of interchangeability in light sources drives up R&D costs, as light sources need to be upgraded and various lighting parameters such as colour temperature, light output and beam angle need to be constantly changed. Given that stock levels must be kept high to hedge against the uncertain supply of components, developers, manufacturers and distributors of LED lighting systems face significant risk due to obsolescence and write-offs.

### What is Zhaga certification?

Zhaga is an international industry-wide consortium for standardisation of LED lights with specifications aimed at ensuring the interchangeability of LED light sources from different manufacturers. Zhaga specifications,

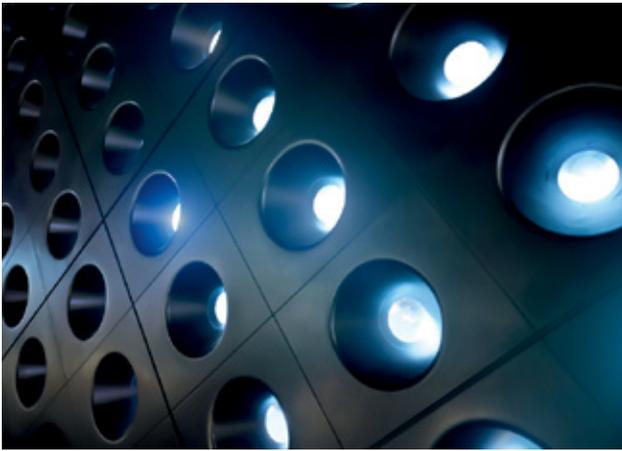
known as Books, describe the interfaces between luminaires and LED light sources. The interface specifications cover the physical dimensions as well as the photometric, electrical and thermal behaviour of LED light engines.

### Why is Zhaga certification important?

LED luminaire manufacturers benefit from multiple suppliers of interchangeable LED light sources, while LED light engine manufacturers can leverage increased volumes of standard products. Zhaga specification makes products more future-proof for large industrial end-users and municipalities. It also simplifies repairs, refurbishment and upgrades.

### How can we help you?

TÜV SÜD is a fully recognised and accredited Zhaga test centre that performs various compatibility, thermal, electrical and photometric tests and certifications. We also perform safety, EMC, energy efficiency and chemical tests.



## Our testing and certification services

### ▪ **Interchangeability**

TÜV SÜD tests and certifies LED luminaires and LED light engines according to Zhaga specifications. These specifications enable the interchangeability of LED light sources made by different manufacturers.

### ▪ **Photometric interface**

We conduct photometric tests concerning the parameters of the light-emitting surfaces: their dimensions, position and orientation, as well as the LED light engine's luminous output, luminous intensity distribution and luminance uniformity. Other important parameters tested are the beam angle and correlated colour temperature.

### ▪ **Mechanical interface**

Mechanical interface testing checks the correct dimensions, positioning of contacts, coded keys and fixing methods of the light engine and holder.

### ▪ **Failure analysis**

In addition to yielding comprehensive and in-depth analyses, our independent investigations can reveal root causes of failures. These analyses lead to solution proposals for preventative measures to avoid product failures that might result in hefty disputes and compensations.

## Your business benefits

- **Save time and money** – when entering new markets with testing services designed to help you meet high standards for quality and safety in the shortest possible time.

- **Minimise risk** – by testing to ensure that your product meets all the legal requirements of your target market.
- **Gain a competitive edge** – with Zhaga-compliant products that will be commercially available from multiple suppliers, and continuously benefit from performance upgrades that LED technology brings.
- **Enjoy global support** – with our international presence, ensuring that our experts and laboratories are available in major markets.

## Why choose TÜV SÜD?

TÜV SÜD is a leading provider of comprehensive and significant performance tests for electrical and lighting products. We have a global network of strong multidisciplinary expertise and our laboratories are equipped with the latest optical testing systems. This enables us to offer a personalised one-stop solution for all your requirements and market standards.

TÜV SÜD has a strong reputation for independence and impartiality. We provide customer-goal-oriented testing that enhances end-user confidence in your products. Our certifications are backed up by long-standing accreditations in key markets.

## Choose certainty. Add value.

TÜV SÜD is a premium quality, safety and sustainability solutions provider that specialises in testing, inspection, auditing, certification, training and knowledge services. Represented in over 800 locations worldwide, we hold accreditations in Europe, the Americas, the Middle East, Asia and Africa. By delivering objective solutions to our customers, we add tangible value to businesses, consumers and the environment.

## Related services

TÜV SÜD provides the following related services:

- Energy efficiency for LED and lighting products
- EMC testing
- Customised performance testing
- RoHS
- Failure analyses