LIGHT MEASUREMENT AND CONTROL
ILLUMINATION AND COLOR PROPERTIES LED LAMP

Illumination lamp serves many types of functions such as indoor and outdoor illumination, ambient illumination, task lighting and etc. These systems often include a variety of lighting fixtures and other controls to achieve illumination. With the introduction of high brightness LED, the world has gradually shifted towards using LED lighting.

LED lamps are assembled by fixing LED into lighting fixtures. LED lamps have longer lifespan and its electrical efficiency is several times better than incandescent and fluorescent lamps. LED lamps can also be offered in a wide variety of base colors by simple color mixing method

Lighting Perception

A LED lamp used for illumination or primary lighting is always associated with how bright and uniformly it illuminates an area. This is what influence people when choosing the type of lighting lamp to be used. Besides good illumination, color properties such as color temperature and color rendering properties of a light source plays a huge role in lighting.

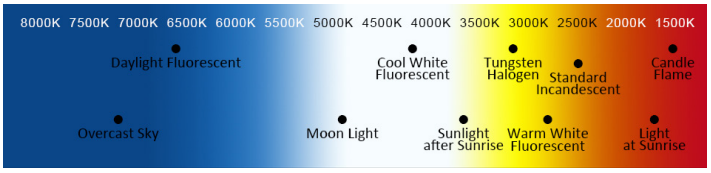
Illuminance Measurement

The parameter to determine and quantify illumination is illuminance . The unit of illuminance measurement is lumen per meter square, also generally known as lux. The luminance measures the amount of light energy reaching a given point on a defined surface area, hence illuminance measurement is distance dependant from the lamp to the designated area of illumination.

Color Properties Evaluation

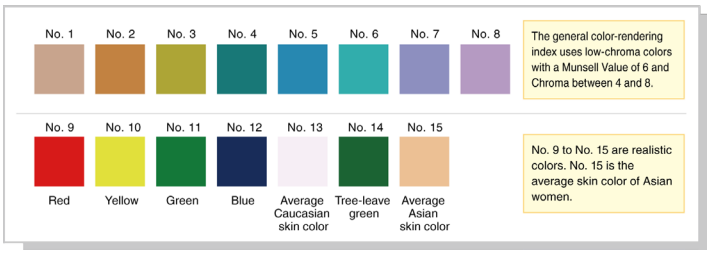
The most common method to quantify and qualify the color properties of “white” lights are color temperature and color rendering index respectively.

Color temperature of a light source is the absolute temperature of blackbody that radiates light of comparable hue to that of the light source. Color temperature is stated in unit of absolute temperature known as kelvin (K). The higher the kelvin numbers (>4000k) mean the light appears more bluish; lower the kelvin numbers (<4000k) mean the light is more reddish.



Color rendering Index (CRI) is an objective quantification of the color rendering ability of a light source, to reveal the colors of various objects faithfully in comparison with an ideal or natural light source.

The standard color rendering indices (Ri) consist of 8 general sample colors (R1 to R8) which are low-chroma (saturation) colors. There is also a set of special color rendering indices which consist of 7 colors (R9 to R15), which are realistic colors like Red, Green, Yellow, Blue, Caucasian skin color, Tree leave green and Asian skin color. The average color rendering index (Ra) is the average of standard color rendering indices (R1 to R8).



Instrumentation

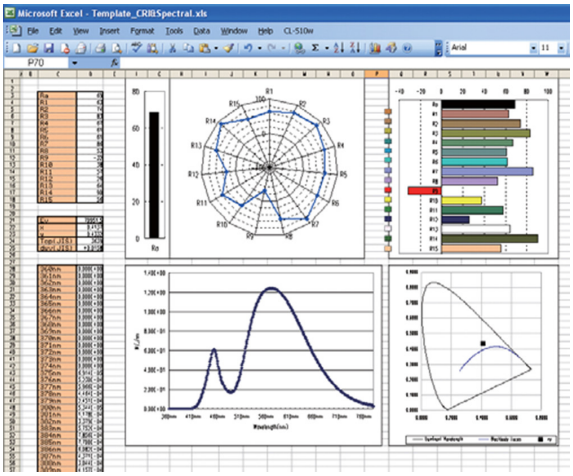
To measure the illuminance, color temperature and CRI of a light source, a spectral based spectrophotometer like the Illuminance Spectrophotometer CL-500A is needed. The CL-500A is a handheld spectral base illuminance meter, this is a light sensing device that measures illuminated light by using a silicon photocell receptor which will absorb the light illuminating on the receptor to compute data.

KONICA MINOLTA SENSING SINGAPORE PTE LTD
10 TEBAN GARDENS CRESCENT SINGAPORE 608923
sensing.konicaminolta.asia

LIGHT MEASUREMENT AND CONTROL
ILLUMINATION AND COLOR PROPERTIES LED LAMP

The CL-500A is an all in one type instrument which does not require any PC to operate, the display on the CL-500A is not only able to output number data, it can also output the spectral irradiance waveform of the visible wavelength from 400nm to 700nm.

For convenience and easy to use data extraction, the CL-500A comes with a data management software CL-S10w which is an add on software to Excel®.



Konica Minolta offers a wide range of meters for quantifying and qualifying light. For more information on light measuring instruments, please click here to visit Konica Minolta website

Alternatively, you can email to us at ssg@gcp.konicaminolta.com for a free copy of 'Lighting Technologies, Principles, and Measurement' educational booklet or contact us at +65 6895 8685 to find out more from our color team on the product capabilities or to have a no-obligation discussion with our application advisors to help you select the appropriate models for your specific application.

KONICA MINOLTA SENSING SINGAPORE PTE LTD
10 TEBAN GARDENS CRESCENT SINGAPORE 608923
sensing.konicaminolta.asia