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Light and Color

Measurement Solutions

SENSING Instruments Co., Ltd

About SENSING

SENSING is a professional manufacturer that provides light and lighting measurement equipment. The company's vision is to furnish customers with instruments dedicated to accuracy, versatility, and ease of operation in the light and lighting measurement.

SENSING continues to maintain its leadership in the international standardization of optical measuring methods. It has developed a series of measurement equipment including portable spectroradiometer, mirror-goniophotometer, fast-response flicker photometer, 2D retinal radiance meter for retinal hazard assessment, and circadian spectroluxmeter for dynamic lighting evaluation.

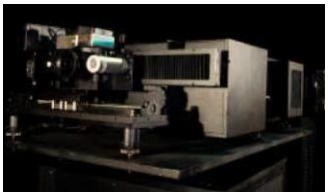
SENSING is continuing providing state-of-art solutions in the optical measurement of light and lighting all over the world.

Contents

Photometric Sphere

- SPR-600 Photometric Spheres
- SPR-100 Thermostatic Sphere
- SPR-300 Rotating Sphere

Photobiological Safety Testing System



- SPR5000 Five-detectors Spectrometer System
- IDR-300 Double-Monochromator System
- RMP-200 Retinal Radiance Meter

Spectroradiometer

- MCS-1000 / MCG-1000 / MCS-200 / MCS-300 CCD Spectroradiometer
- SL-300 / SPR-3000 / SPR-5000 Scanning Specroradiometer

Onsite Lighting Testing System

- MPR-220 Imaging Spectrometer
- MPR-15 Imaging Luminance Meter
- TLA-310 Flicker Photometer
- SL-100 Spectro Luxmeter
- PR202W Luxmeter (Recorder)
- SCD-20 Spectro-radiance Meter
- SCD-30 Imaging luminance Meter

Mirror Goniophotometer

Goniophotometer with Rotating Mirror

- GMS-3000 High-speed Goniophotometer
- GMS-2000 Mirror Goniophotometer
- GMS-2200 Goniophotometer with Double Mirror

More

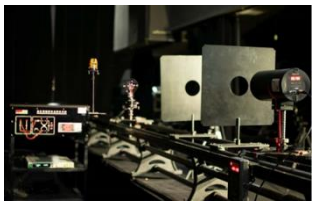
- SPR-960 Spectrofluorimetric System
- LED-201 Thermal Station
- LED Luminaire Lifetime Testing System
- LED Lifetime Acceleration Testing System

Non-Mirror Goniophotometer

Goniophotometer

- GMS-1600 Near-field Goniophotometer
- GMS-1980 Goniophotometer
- GMS-1800 Goniophotometer

NVLAP Certification Lab



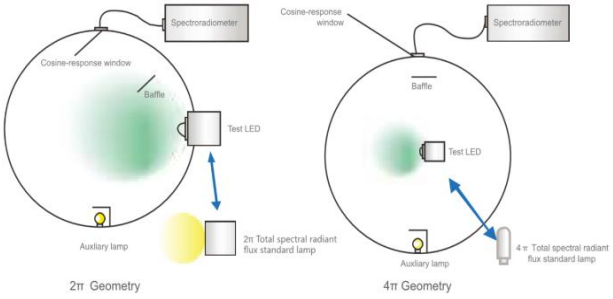
- SENSING Modern Lighting & Display Metrology Laboratory

PHOTOMETRIC SPHERE

Product Selection

Sphere Size

0.3m, 0.5m, 1.0m, 2.0m, 2.5m, 3m Optional.



Geometry

4π: Lamp mounted in the center of the sphere.
2π: Lamp mounted on the window of the sphere.

Thermostatic Methods

Type	Application
Ambient	General lamp
On base	LEDs and LED modules
Circular air	T5, CFL, LED,Lamps

Diffuse Reflection Coating

Coating	Type	Reflectance	Spectral range
High reflectance coating	R97	0.97	350nm~800nm
R80 reflectance coating	R80	0.80	350nm~800nm
UV high reflectance coating	R92UV	0.92	200(250)nm~1400nm

Typical Structures

Common	Movable holder thermostatic sphere	Thermostatic sphere	Side movable thermostatic sphere	Top opening sphere	Rotating sphere	Special sphere forT5/T8 LED tube
 Geometry : 2π&4π	 Geometry : 2π	 Geometry : 2π&4π	 Geometry : 2π&4π	 Geometry : 2π	 Geometry : 2π&4π	 Geometry : 4π
Diameter : Φ0.3m~Φ3.0m	Diameter : Φ0.3m、Φ0.5m Movable holder	Diameter : Φ1.0m~Φ4.0m Thermostatic air on the inner surface, video monitor in the sphere, motor driven door opening	Diameter: Φ0.5m TEC cooling base	Diameter: Φ0.3m TEC cooling base	Diameter: Φ1.0m~Φ2.0m Angle range: 0~360°	Diameter: Φ1.5m~2.0m High efficiency sliding rail special for T5/T8 LED tube

PHOTOMETRIC SPHERE

SPR-600 Photometric Sphere

Thermostatic Control

Coating with high reflectance

Auxiliary lamp for self-absorption correction 7

Video Monitor

Alignment Laser

Automatic opening 8

The reflectance uniformity of coating is inspected strictly

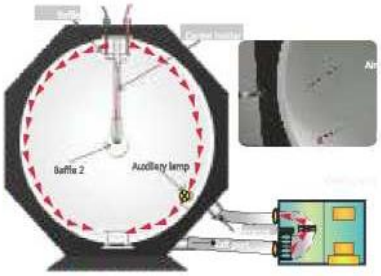
A various of sockets 6

2π testing port 9

PHOTOMETRIC SPHERE

SPR-100 Thermostatic Sphere

It is specialized designed for accurate measurement of power LED devices, modules and lamps in according to NIST(US) requirements for LED measurement standardization.



Three Methods of the Temperature Control

- Circular thermostatic air on the inner surface of the sphere form top-in to bottom-out
- TEC cooling base of lamp holder in the center of sphere with 4π geometry
- TEC cooling base of window connector on the side port of sphere with 2π geometry

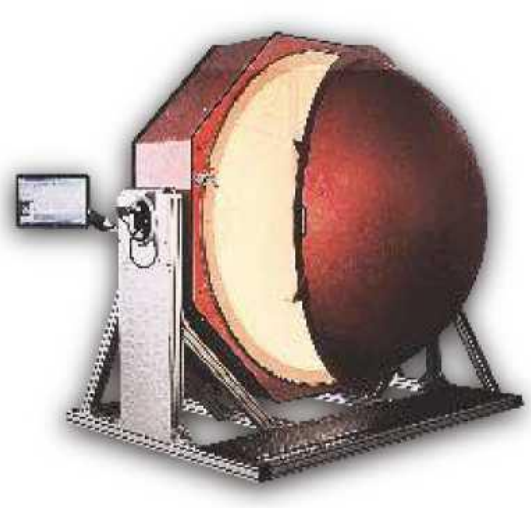
Specifications

- Integrated temporal photometer inside use for light oscillograph and flicker analysis
- Mini-video camera in the sphere to capture the burning scene
- Auxiliary lamp used to eliminate self-absorption affection
- A transparent LED cover for Anti-dew, compatible interface to vacuum pump
- Enable to integrated with Spectroradiometer
- Laser aligment for installation of tested lamps in the center
- The speed of airflow is much less than 0.2m/s

PHOTOMETRIC SPHERE

SPR-300 Rotating Sphere

The test lamp can be measured at any angle as the working direction in the rotating sphere according to the requirements of IES LM 79, The rotating sphere can stop in any position for the measurement requirements of 2π side openings geometry and 4π central geometry. The sphere also can be conveniently, and safety controlled to rotate to any position lamp installation. The measuring equipment is fixed all the time to ensure high accuracy photometry and colorimetry measurement.



Specifications

- Diameter: 1.0 - 2.0 m (Customized)
- Rotating range: 0~360°
- Rotating mode: Motorized & Manual with angle self-lock device
- Geometry: 2π & 4π
- Equipped with auxiliary lamp for absorption calibration
- Laser alignment for installation of tested lamps in the center
- Video monitor for inner sphere
- Equipped with touchscreen for operation
- Professional paint for surface
- Equipped with locking bolt and anti-shock pad for safe operation

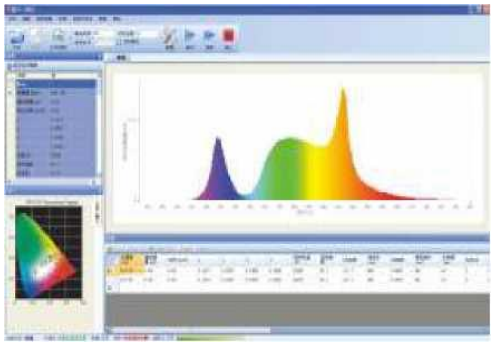



SPECTRORADIOMETERSPECTRORADIO

MCS-1000 TEC-cooling CCD Spectroradiometer

MCS-1000 used advanced M-type optical structure and flat field concave grating with low stray light and high diffraction efficiency. TEC-cooling scientific grade CCD area image sensor, and low noise and high sensitivity amplifier. It has extremely wide spectral range, millisecond measurement speed and high accuracy of measurements.

All the parts of the spectroradiometer are assembled in Japan. Comparing with the similar products, it is more reliable, and high in accuracy, especially for the LEDs with different spectrum distribution, inner and external trigger function is equipped in GMS-1000, which can easily measure the temporal optical performance of LEDs and pulsed sources.



Specifications

- High performance M-Type optical structure with extreme low stray light
- Scientific TEC-cooled CCD area image sensor with low nose and high Dynamic range
- High spectrum accuracy and photometry colorimetry accuracy
- Inner and external trigger
- Measuring features: High speed and accuracy
- Hamamatsu TEC-cooled high sensitivity back-thinned CCD area image sensor, cooling temperature: -10°C ± 0.05°C
- Exposure: 6ms - 60s
- Grating: flat field concave holographic grating

SPECTRORADIOMETER

- Resolution: 1024 X 128
- Spectrum range: 300 nm – 800 nm
- Wavelength accuracy: ± 0.2 nm
- Chromaticity accuracy: ± 0.0015 Chromaticity repeatability: ±0.00015 x, ± 0.0002 y
- Stray-light: 5.0 x 10^{-5}
- Photometric linearity: ± 0.2 % Photometric accuracy: 0.5 %
- A/D converter: 16 bits

Application

Fig 1: Application to Photometric Sphere

Fig 2: Application to TEC-based Sphere

SPECTRORADIOMETER

MCG-1000 Scientific CCD Spectroradiometer

MCG-1000 is a scientific CCD spectrometer developed by SENSING together with Germany well-known optical company, made in Germany. Patented ceramics of Zeiss and the holographic concave grating are used in inner optics system. Highest accuracy scientific grade back-thinned CCD area image sensor is used as the detector. With wide spectral range(200~980 nm), low stray light, milliseconds measurement speed and scientific grade measurement accuracy, it is widely applied in the quick measurement of spectral power distribution, CCT, chromaticity coordinates, dominant wavelength, peak wavelength, color purity, color tolerance, luminous flux, radiant power etc.

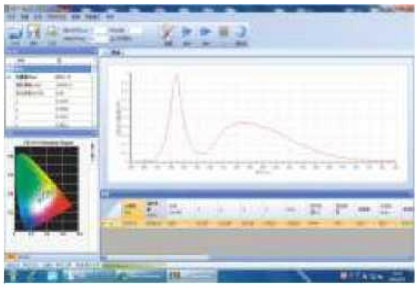
Specifications

- Detector: HAMAMATSU back-thinned CCD area image, sensor with TEC-cooling
- Spectral: 200nm ~ 980nm
- Spectral reproducibility: 0.1 nm
- Spectral accuracy ± 0.2 nm
- TEC cooler: - 10°C
- Temperature stability: <± 0.05°C
- Pixels: 1024 x 128 (Binning mode is available)
- Spectrometer module: MCS Polychromator
- Digitizer (A/D): 16 bit

SPECTRORADIOMETER

MCS-300 Spectroradiometer

Equipped with high accuracy back-thinned CCD array detector (HAMAMATSU), the spectroradiometer meets the requirements of high sensitivity and high accuracy. With high performance-price ratio, it is suitable for the high accuracy measurement.



Specifications

- Low stray light with Symmetrical cross C-T optical structure which is painted with high absorbing light
- Aerospace grade materials
- Eliminate high order diffraction use special filters
- Spectrum range: 350 nm-800 nm
- Wavelength accuracy: ± 0.2 nm
- Integrating time: 1 ms – 60 s
- Stray light: <0.1% @ 600 nm
- Dynamic range: 6000:1

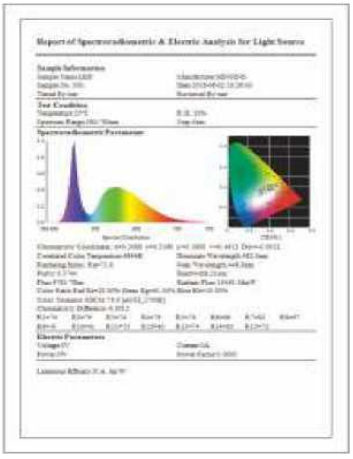
SPECTRORADIOMETER

SL-300 VIS Spectroradiometer

To determine the spectroradiometric and colorimetric parameters by spectroradiometry method according to CIE NO.63, e.g.: spectral power distribution, chromaticity coordinates, correlated color temperature, color rending index, color tolerance, color difference, color purity, dominant wavelength, luminous flux, radiant power, photobiology index, luminous efficiency etc. It is widely used in the quality analysis of light sources, luminaries and etc.

Specifications

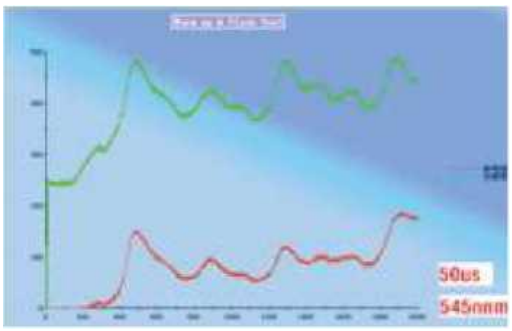
- Meet the requirement of CIE & GB/T
- To measure photometric and colormetric parameters
- By spectroradiometry without V（λ）error
- Detector: HAMAMATSU PMT
- Spectral range: 350 nm ~ 800 nm
- Wavelength accuracy: 0.2 nm
- Wavelength Repeatability: 0.1 nm
- Speed: 30 s / 400 nm



SPECTRORADIOMETER

SPR-3000 UV-VIS Spectroradiometer

It is composed of C-T monochromator with grating dispersion, servo motor for high speed wavelength position, and high sensitive PMT. It could be widely used in fast measurement of spectrum, photometry and chromaticity. It could obviously reduce the effect of the light source, and also save the test time. Meanwhile, it could be used to analyze the flash run-up characteristics of light sources. Warm-up time and spectrum of the starting time. It is suitable for discharge and lifetime for light source starting.



Model

Type	Spectral Range	Features	Spectral range
SPR-3000	350nm~800nm	Double dispersion with monochromator and filter disc. Low stray light	High speed, accuracy measurement
SPR-3000D	350nm~800nm	Double dispersion with monochromator and filter disc. Synchronous measurement with double PMTs.	High speed, accuracy measurement & Synchronous temporal photometry
SUV-3000	200nm~800nm	Double dispersion with monochromator and filter disc. Synchronous measurement with double PMTs.	High speed, accuracy measurement & Synchronous temporal photometry

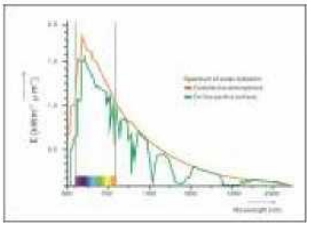
Specifications

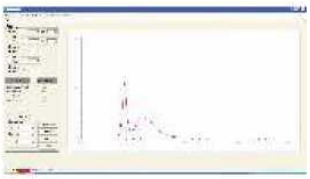
- Spectral range: 200 nm ~ 800 nm
- Wavelength accuracy: 0.2 m
- Spectral interval: 0.1 nm, 0.5 nm, 1 nm, 5 nm
- Photometric accuracy: 1 %
- Fast measurement: 10 s / 400 nm
- Sampling frequency of spectrum: 500 kHz

SPECTRORADIOMETER

SPR-5000B UV-VIS-IR Spectroradiometer

According to the requirements of CIE No.63, double dispersion with three monochromator and eight filters, four channels of detecting system to measure the spectral distribution in the spectral range of 200 nm – 3000 nm (UV-VIS-IR) with high performance of low stray light, wide dynamic range, and high S/N ratio. It is ideal for radiation safety analysis of lighting products and LED devices.





Specifications

- Detector: Hamamatsu PMT / In GaAs / Pbs / Si
- Dispersion: Double dispersion with filters disc and monochromators
- Spectral range: 200 nm-3000 nm Wavelength accuracy: 0.2 nm, 0.5 nm
- Wavelength repeatability: 0.1 nm
- Spectral interval: 1 nm, 2 nm, 5 nm
- USB 2.0 / RS 232

GONIOPHOTOMETER

Product Selection

Continuous Rotation Power System

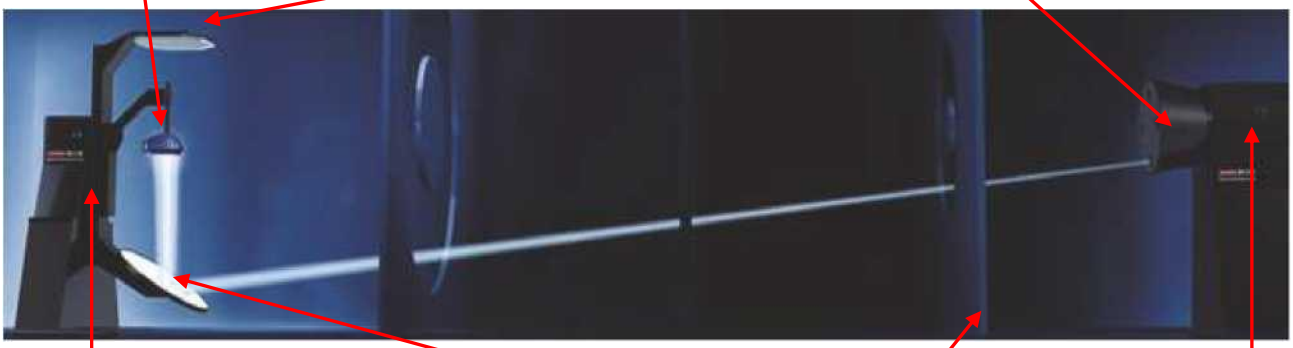
- High-speed power slip ring (18L, 10A / 600V)
- High reliability, intelligent variable speed
- Speed up to 3RPM for continuous measurement

Light Trap

- The same as NIST configuration
- Strictly eliminate back reflected light
- Synchronously pursuit tested lamp

High Accuracy Photometer Head

- Temperature（35℃）
- Thermostatic together with the detector
- Precision, high sensitivity detector: CLASS L, Mismatch error f1' < 1.5%



Driving Mechanism Gear Box (y Axis)

- Max 5000 N/m driving torque
- Extremely low backlash (<than 1 arcmin, Expert level)
- Keyless connection with shrink disc for axle, no transmission shift
- Maintenance free: High performance polyglycol
- lubricant, long life Precision Right-angle Gear Box (Self-locked)

High Flatness & High Accuracy Mirror

- High accuracy mirror
- Multiple (more 60 points) adjustable connection
- Flatness: calibrated with 120 laser beams
- Max deviation: less than 3%, Standard deviation: less than 1% (according to EN 13032-1)

Multi-baffles Stray Light Control Application

- Strictly comply with CIE 70 to eliminate stray light
- Multi-baffle to eliminate the stray light sufficiently

Multi-Detectors, Motor-driver

- Photometer
- Spectroradiometer
- 2D image Photometer
- Temporal

Specifications

Type	Minimum Labratory Height	Maximum Size of Luminaire	Center Height of Equipment	Labratory Length	Labratory Width
GMS-2000-4.0m	4.0米	1.2米	1.6米	14米	4米
GMS-2000-5.5m	5.5米	1.6米	2米	19米	6米
Type	Minimum Labratory Height	Maximum Size of Luminaire	Center Height of Equipment	Labratory Length	Labratory Width
GMS-3000-3m	3.1米	0.9米	1.5米	10米	3.6米
GMS-3000-4m	4.1米	1.2米	1.99米	12米	4.5米
GMS-3000-5m	5.1米	1.6米	2.5米	16米	5.5米
Type	Minimum Labratory Height	Maximum Size of Luminaire	Center Height of Equipment	Labratory Length	Labratory Width
GMS-2200-3m	3.1米	0.9米	1.5米	13米	3.6米
GMS-2200-4m	4.1米	1.2米	1.99米	15米	4.5米
GMS-2200-5m	5.1米	1.6米	2.5米	20米	5.5米
Type	Minimum Labratory Height	Maximum Size of Luminaire	Center Height of Equipment	Labratory Length	Labratory Width
GMS-1600	3.5米	0.3米	1.7米	3米	3.5米
Type	Minimum Labratory Height	Maximum Size of Luminaire	Center Height of Equipment	Labratory Length	Labratory Width
GMS-1980	2.6米	0.6米	1.28米	8米	3米
Type	Minimum Labratory Height	Maximum Size of Luminaire	Center Height of Equipment	Labratory Length	Labratory Width
GMS-1800B	2.4米	1.6米	1.55米	8米	2.5米
GMS-1800	2.1米	1.6米	1.28米	8米	2.5米

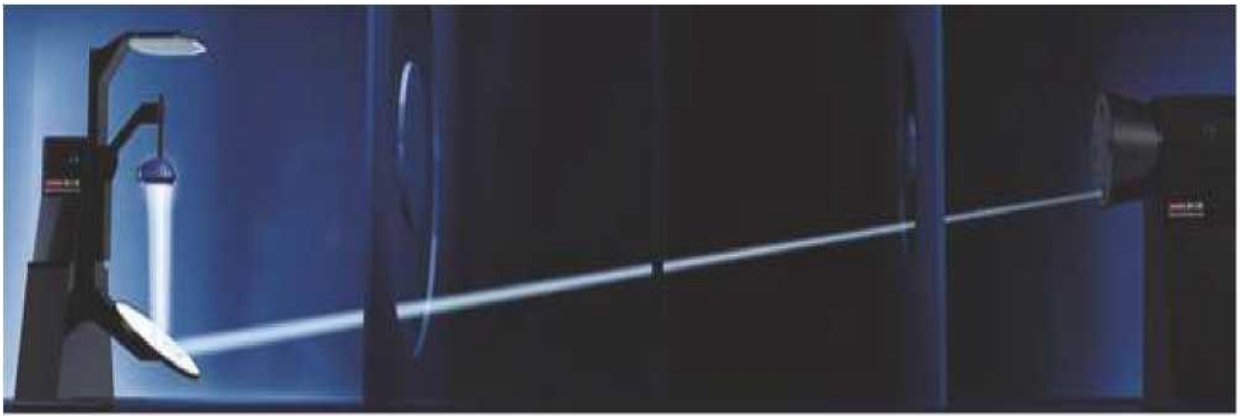
GONIOPHOTOMETER

GMS-3000 High-Speed Goniophotometer

About GMS-3000 goniophotometer, the tested luminaire rotates only around the fixed vertical axis in the prescribed burning position and a reflecting mirror rotates around the horizontal axis, meanwhile, the photometer rotates around the horizontal axis synchronously to pursuit the measuring beam. With multiple detectors, it could measure the luminous intensity distribution and spatial chromaticity uniformity of luminaires.

Specifications

- □C-Gamma photometric coordinate system
- □High-speed rotating mirror
- □Perpendicularly pursuing detectors rotation synchronously with the mirror
- □Multi-photodetector system integrated with the high sensitivity thermostatic
- □Photometer, TEC-based CCD spectroradiometer，2D imaging luminance meter and fast response photometer
- □Fine V(λ) photodetector，f1’ less than 0.01 s
- □Mirror sizes : D 0.9 m，D 1.6 m，D 2.0 m（option）



GONIOPHOTOMETER

GMS-2000 Mirror　Goniophotometer

It has three rotation axis in GMS-2000 goniophotometer. A precision reflecting mirror rotates around the horizontal axis and the tested luminaire rotates in the prescribed burning position and around the vertical axis, meanwhile, a synchronous axis will rotate toward the opposite direction synchronously. The combined motion of the luminaire and mirror permit light measurement at the direction of any horizontal or vertical angle without tilting the tested luminaire, therefore, the luminaire intensity will be more stable. The photometer head located at a fixed position of the required photometric distance in front of the reflecting mirror to detect luminous intensity in each direction

Specifications

- Burning point working state of luminaire is constant during test
- Constant light beam and low stray light with eliminated by multiple long distance baffle
- The light beam perpendicularly incidents on the detector
- Airflow movement is less than 0.2 m/s, which meet the requirement of CIE 121
- High accuracy detector and Spectroradiometer, which meet the requirements of spatial non-uniformity of chromaticity in IES LM 79-08
- Mirror sizes : D 0.9 m，D 1.6 m，D 2.0 m（option）

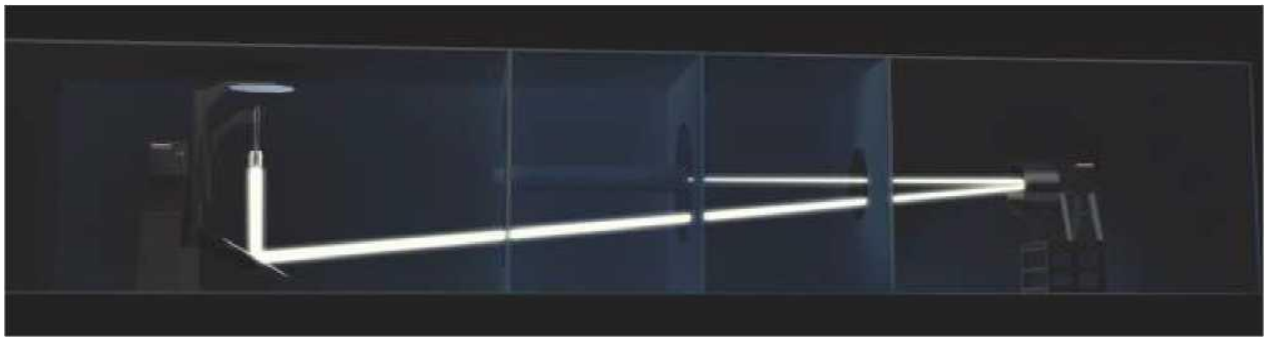
GONIOPHOTOMETER

GMS-2200 Goniophotometer with Double Mirror

In GMS-2200 goniophotometer, the tested luminaire rotates only around the fixed vertical axis in the prescribed burning position and reflecting mirror rotates around the horizontal axis, meanwhile, the mirror on rotating table in the opposite side rotates around the horizontal axis synchronously to pursuit the measuring beam reflected by the first mirror, and then reflect the measured beam perpendicularly towards to a fixed detector at the horizontal rotation axis. Then combined motion of the luminaire and mirror permit the measurement of luminaires intensity at the direction of any horizontal or vertical angle without titling the luminaire.

Specifications

- Tested luminaires are fixed in stable burning situation
- Measuring light incidence perpendicularly to the fixed photodetector
- Excellent low stray light by installation of multi-baffles between tested luminaire and the photodetector
- Light-trap plate moving synchronously with the mirror to eliminate
- the stray light of background reflection
- Equipped with photodetector and color detector, with meet the requirement of spatial non-uniformity of chromaticity in IES LM 79-08



GONIOPHOTOMETER

GMS-1600 Near-field Goniophotometer

GMS-1600 is a high accuracy absolute measurement goniophotometer (C type) with no mirror, in accordance with the goniophotometer configuration from NIST, it is equipped with high accuracy photometer head and CCD speed spectroradiometer, tests both the absolute spatial luminous intensity distribution and absolute color distribution directly. The pursuit detector with the light tray in the opposite direction eliminates the backward stray light completely. GMS-1600 goniophotometer is suitable for the high accuracy measurement of spatial luminous distribution, efficiency, chromaticity coordinate for all kinds of LED modules, light source and small size luminaire.

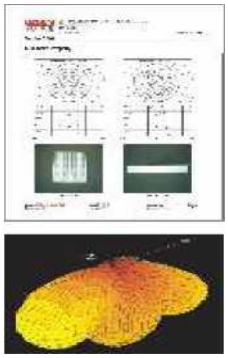
GMS-1980 Goniophotometer

To meet the requirements of the structure recommended in CIE NO. 70 and US Energy Star standard for SSL LM 79-08, the goniophotometer could measure the light distribution with C-Y coordinate system while the luminaire position is fixed, and mirror rotates around luminaire. It is suitable for the measurement of the spatial intensity distribution and all of the photometric parameters of indoor lightings, flood lightings and read lightings. The detector platform could install the photoheader and color detector to measure the nonuniformity of photometry and chromaticity.

GONIOPHOTOMETER

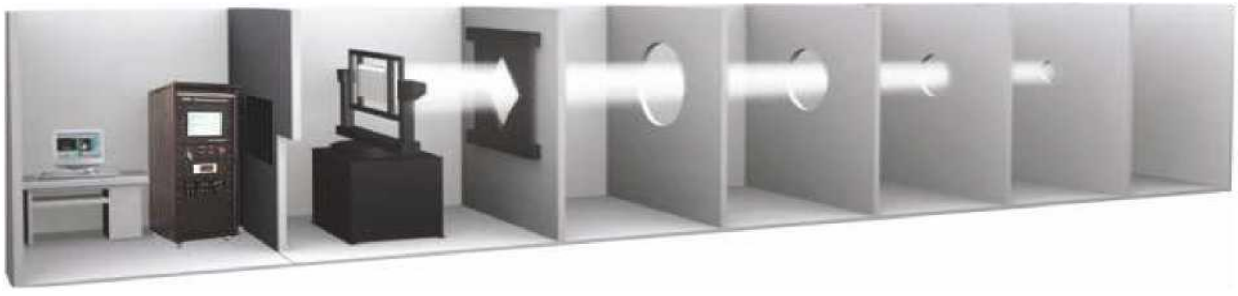
GMS-1800 Goniophotometer

In GMS-1800 goniophotometer, there are horizontal axis and vertical axis to drive the tested luminaire rotating in B-R system or in C-γ system. Used for measuring the special intensity distribution and photometric parameters of indoor & outdoor lighting luminaire. Parameters including special intensity distribution curve, special isocandela curve, special isolux curve, luminance, luminaire efficiency, grade of glare, total and effective luminous flux of luminaire, productivity of luminaire, and
electrical



Specifications

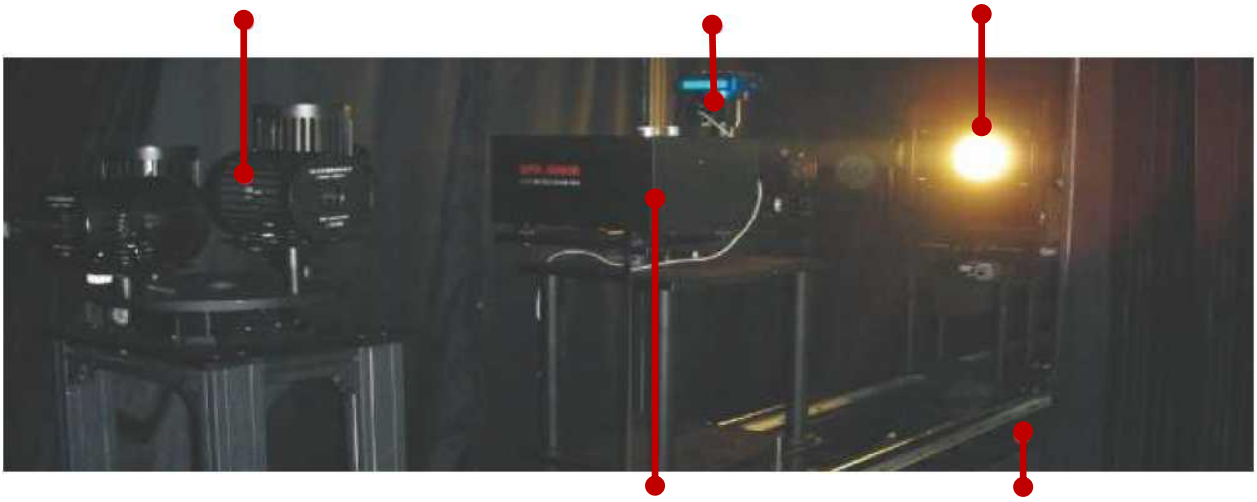
- Photodetector: Fine V(λ) correctio n CIE-f1' less than 0.015
- Photometric resolution: 0.00001 lx, 0.0001 lx, 0.001 lx (Optional)
- Angle accuracy: 0.1°; Resolution: 0.002°
- Max capacity of tested luminaires: Weight: 50 kg; Dimension: 1.4 m x 1.4 m
- Power: AC/DC 600 V/10 A x 6 lines Wireless reference photodetector as compensation of light fluctuation



PHOTOBIOLOGICAL RADIATION SAFETY

SPR5000 Five-detectors Spectrometer System

The system is specially designed for determining the risk group of optical radiation hazard specified in IEC 62471 such as actinic UV hazard exposure for the skin and eye, near-UV hazard exposure for the eyes, retinal bluelight hazard exposure, retinal thermal hazard exposure, thermal radiation hazard for eye and skin, for LED products, UV-Lamps, lighting sources, luminaires and etc.



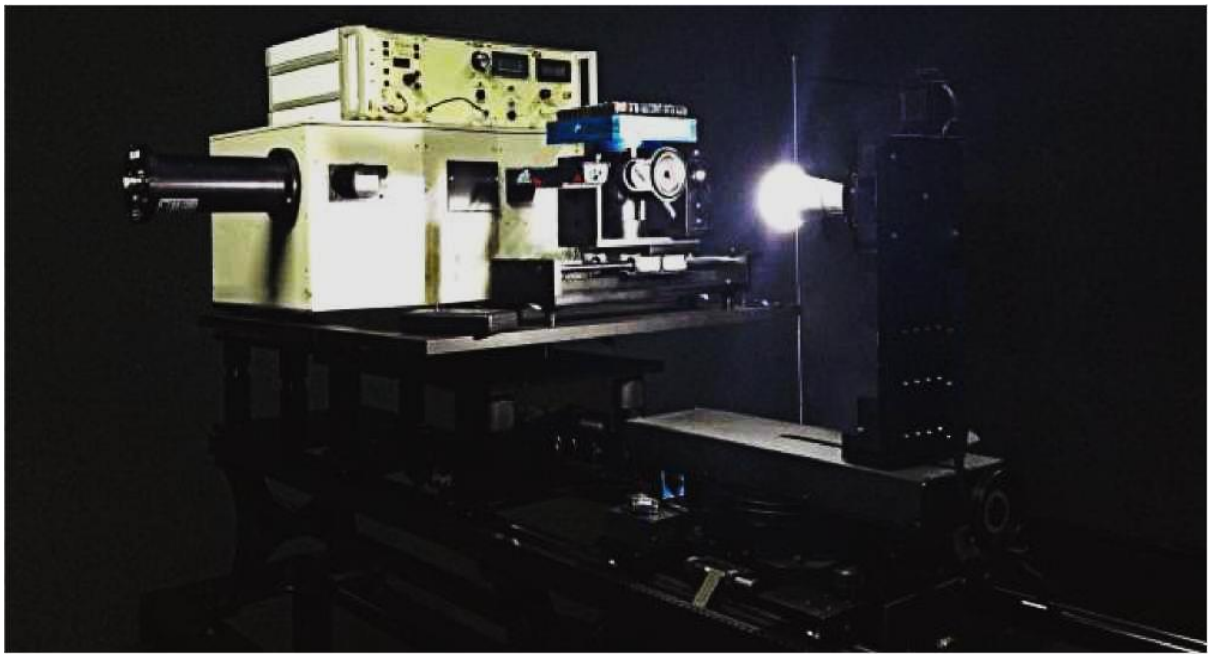
Specifications

- Spectrum range: 200 nm-3000 nm
- Wavelength accuracy: 0.2 nm
- Five detectors for measurement of different optical radiation hazards
- Radiance geometry: optics simulating to human eye, with 7 mm in put aperture
- Image radiance meter: 16 bits scientific cooling CCD, 1600 x 1200 pixels
- Temporal response: 2 us
- Field of viewing: 1.0-110 mrad
- Testing distance: 200 mm-8 m

PHOTOBIOLOGICAL RADIATION SAFETY

IDR-200 Double Monochromator System

IDR-300 spectroradiometer is equipped with four detectors and also advanced circuit designed, all these detectors can be automatically adjusted to their working conditions. One continuous measurement can cover optical wavelength from 200 nm to 3000 nm, covering UV, VIS and IR. It can capture Spectral Power Distribution, parameters of Photometry and Radiance. The excellent performance of stray light control guarantees the extremely low stray light, very wide dynamic range and very high
Signal-to-Noise Ratio;



Specifications

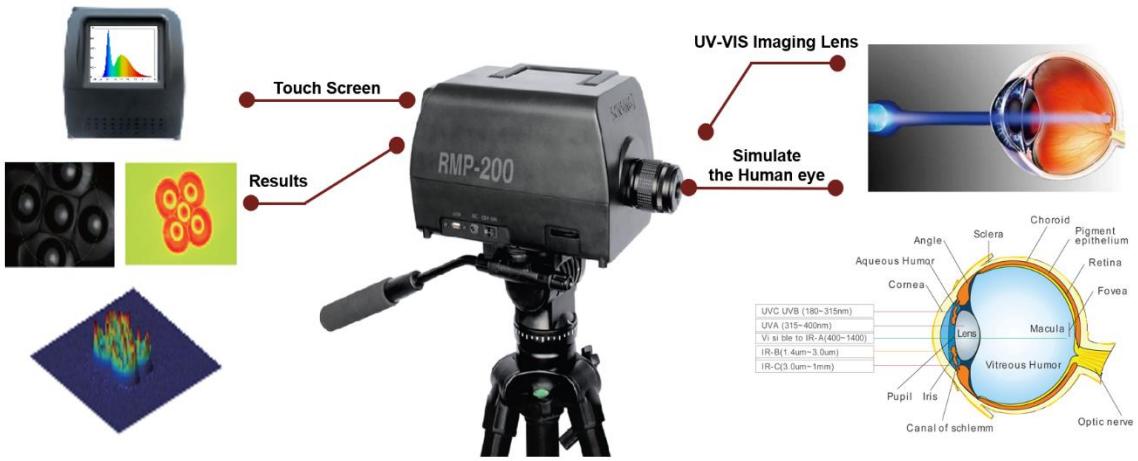
- Continuous scanning m full spectrum (200 nm – 3000 nm)
- Automatic measurement with Multi-photodetectors, Multi-photodetectors according to IEC 62471
- Double monochromator with three gratings
- Spectral radiance and irradiance measurement in full spectrum

PHOTOBIOLOGICAL RADIATION SAFETY

RMP-200 Retina Radiance Meter

Adopting SENSING's innovated imaging simulation technology of human-eye and high accuracy spectrum measurement technology, to evaluate the retinal radiance of optical radiation hazard with specified FOV. It is designed as a portable instrument.

It is ideal for the photobiological safety classification for LED lighting products, lighting environment.



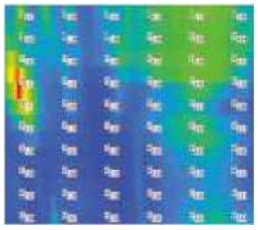
Specifications

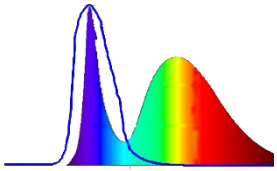
- Spectral range: 300 nm - 800 nm
- Wavelength accuracy: 0.3 nm
- Luminance measurement accuracy: 0.3%
- Exposure time range: 10 ms-1000 ms
- Constant incident aperture: 7 mm
- Weight: 8 kg
- Size: 37 cm*25 cm*19 cm
- Endurance: 8 h
- Test distance: 200 mm-∞

ONSITE LIGHTING TESTING EQUIPMENT

MPR-220 Imaging Spectrometer

Application of SENSING's innovative design concepts and technology. The MPR-220 integrates a high-precision spectroradiometer and high-resolution imaging detector, to evaluate the luminance and spectrum of different types of displays. It has the functions of both Imaging luminance meter and spectroradiometer.





MAIN FUNCTIONS

- Spectral radiance
- Chromaticity and Color gamut
- Luminance and Luminance distribution
- Mura
- Uniformity
- Contrast

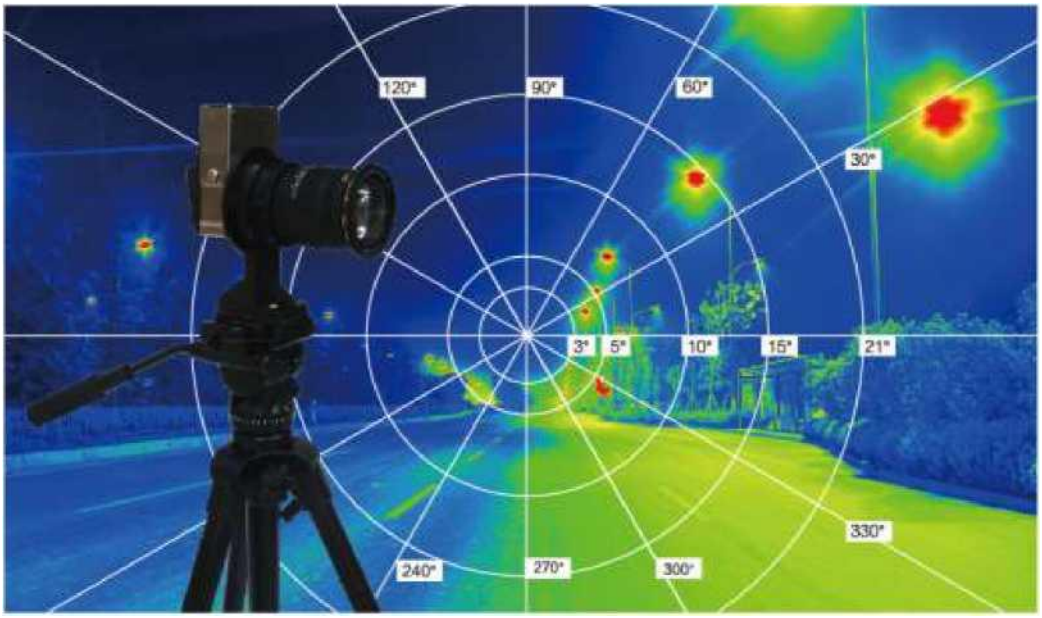
TECHNICAL FEATURES

- Wide-range measurable luminance and suitable for low luminance levels measurement.
- High-resolution imaging detector used to analyze image quality.
- High-precision spectroradiometer supply excellent color analysis ability.

ONSITE LIGHTING TESTING EQUIPMENT

MPR-15 Imaging Luminance Meter

It is used to evaluate the road lighting, to measure the luminance of road surface, total uniformity, vertical uniformity, vertical illuminance, veiling luminance and TI. The system support multiple measuring modes such as single measurement, high accuracy measurement, continuous high dynamic measurement and triggering high speed measurement. The imaging luminance analysis and dynamic glare analysis could be shown in real time.



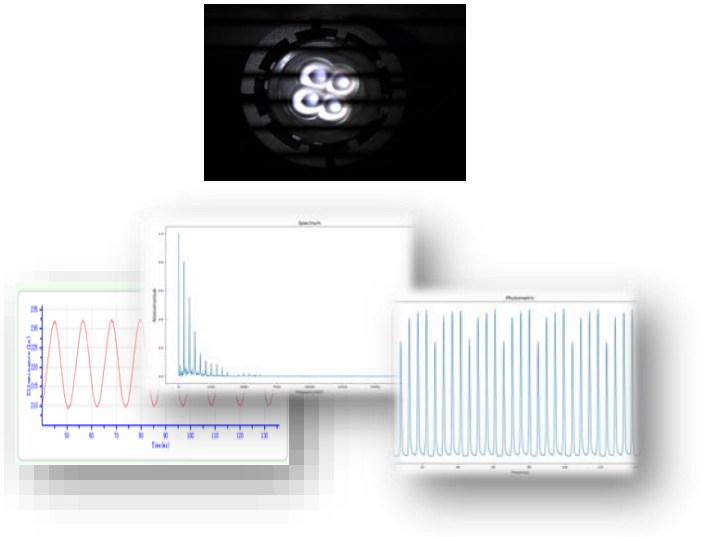
Specifications

- 2 mega pixels scientific-grade CCD
- CCD adopt advanced thermoelectric refrigeration technology, making it possible to realize the temperature control ranging from -35 Celsius degrees to room temperature
- Adopting unique calibration techniques, the luminance precision of luminance meter
- can be better than 3%
- Specialized test software for road luminance allows users to create one-time two-dimensional luminance distribution of the road and street lamps and achieve high dynamic measurements for on-site road environment
- Analysis and calculation of road lighting glare TI

ONSITE LIGHTING TESTING EQUIPMENT

TLA-310 Flicker Photometer

TLA-310 is specialized to measure modulated light wave for determination of temporal light artifacts, such as the flicker and stroboscopic effects of displays, lighting products as well as the environment illumination, specially to evaluate the flicker effects by weighting with the eye temporal contrast sensitivity.



MAIN FUNCTIONS

- Flicker evaluation
- Response time
- Light waveform curve
- Power spectrum of light wave
- Flicker index FI (Energy Star)
- Percentage of Modulation (CEC)
- Pst (IEC)
- Mp (ASSISI)
- SVM(CIE)

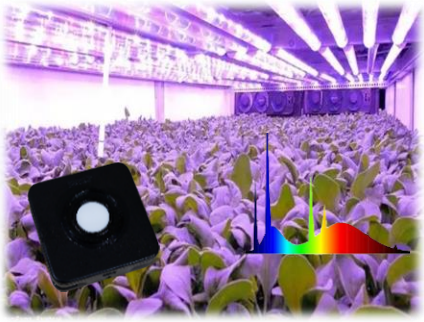
Technical Features

- High-speed PMT photon detector
- Applicable to all requirements in IEC、IEEE、CEC、CIE and etc
- Triggering by a programmable pulse, or IR remote
- Portable with wireless and chargeable battery

ONSITE LIGHTING TESTING EQUIPMENT

SL-100 Spectral luxmeter

SL-100 Spectral luxmeter is specialized to measure the spectral irradiance distribution and temporal light wave for evaluation of the lighting quality, illuminance performance and plant illumination level and so on.

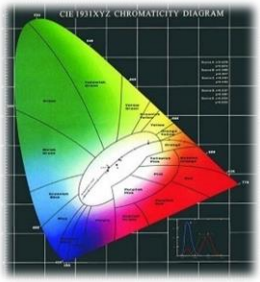


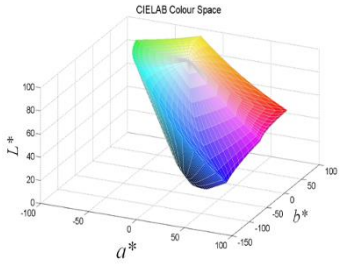
MAIN FUNCTIONS

- Spectral power distribution
- Illuminance / Luminance
- Color coordinates
- Color temperature (CCT)
- Spectral irradiance
- Color rendering index
- Flicker
- Temporal light waveform

Technical Features

- Integrated with a mini spectrometer and a high-speed PD detector
- Compatible with IOS and Android mobile, and MS PC
- Integrative light sensor network for the multipoint measurement through WIFI





ONSITE LIGHTING TESTING EQUIPMENT

PR202W Wireless Luxmeter/Recorder

- Remote lighting measurement on site
- The illuminance value could be continuously recorded(>2 months)
- Multi-channels: 64 channels network measurement (W)

SCD-20 Spectro-radiance Meter

- Application of SENSING's innovative design concepts and technology. The SCD-20 integrates a spectroradiometer and imaging detector, to evaluate the luminance, spectrum of light environment. It has easy to carry and evaluation glare onsite.

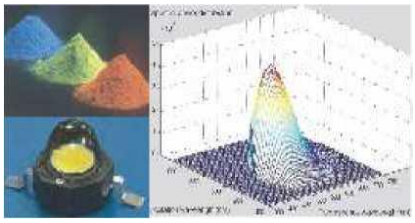
SCD-30 Imaging luminance Meter

- Portable Imaging Luminance meter is specialized to measure the lighting glare, Imaging Luminance and color data onsite.

MORE….

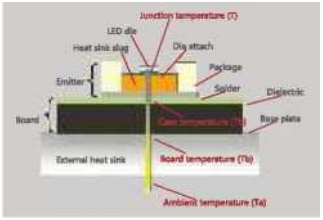
SPR-960 Spectrofluorimetric System

SPR-960 spectrofluorimetric system to measurement the 3D fluorescence spectrum, quantum efficiency, energy efficiency, luminous efficiency, fluorescence chromaticity of LED phosphors. The phosphors can be excited by monochromatic light from 200 nm to 800 nm. With the information of 3D fluorescence spectrum, suitable phosphor materials and LED chip can be chosen to implement the best matching in luminous efficacy and color performance (Tc, Ra) for white LEDs.



LED-201 Thermal Station

To determine junction temperature, thermal resistance under the stable and temporal conditions and luminous flux, radiant flux, spectrum distribution, peak, wavelength, dominant wavelength, FWHM, electric parameters of LEDs operating at various of ambient temperature and forward current. luminous efficacy and color performance (Tc, Ra) for white LEDs.



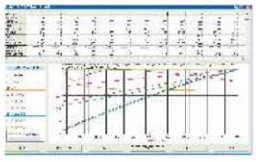
MORE….

LED Luminaire Lifetime Testing System

According to the requirements of IESNA LM-08-08, GB/T24824, GB/T24823, LB/T001, the systems is used to aged sorting, reliable, and accelerated lifetime test for LED modules and LED luminaires. The system can monitor and record the photometric parameters, electrical parameters and shell temperature in real time, to test the thermal performance and lumen maintenance ratio. luminous efficacy and color performance (Tc, Ra) for white LEDs.

LED Lifetime Acceleration Testing System

LATS-90 system consists of temperature stabilized chambers, power supply of testing LEDs, junction temperature detecting system and light measuring system, can record the light degeneration of each testing LED at specified power current under ageing temperature. The lifetime of tested LEDs under operating temperature can be expected through light decay extra polating and the lifetime accelerating model.



SENSING Modern Lighting & Display Metrology Labotatory

SENSING also focus highly on promoting the development of methodology. SENSING has owned an advanced laboratory for the calibration and testing of conventional and advanced display and lighting measurements.

The laboratory follows high discipline that is capable of calibrating standard sources which are traceable to NIM and NIST with uncertainty of less than 1%. Our testing laboratory is capable of testing most basic performance in photometry, colorimetry, spectroradiometry from 200 nm to 3000 nm, photobiological hazards assessments for the eye and skin as well as non-visual effect evaluation of light and lighting, etc.

SENSING lab calibration and test capacity has been recognized by NVLAP, and also recognized by TUV and other Lighting Facts. We can provide customers with quality testing and calibration services.

United States Department of Commerce
National Institute of Standards and Technology

NVLAP

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 600198-0

Zhejiang SENSING Optronics Co. Ltd.
Deqing
China

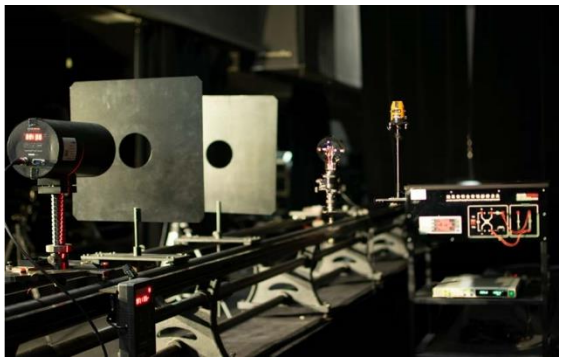
is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

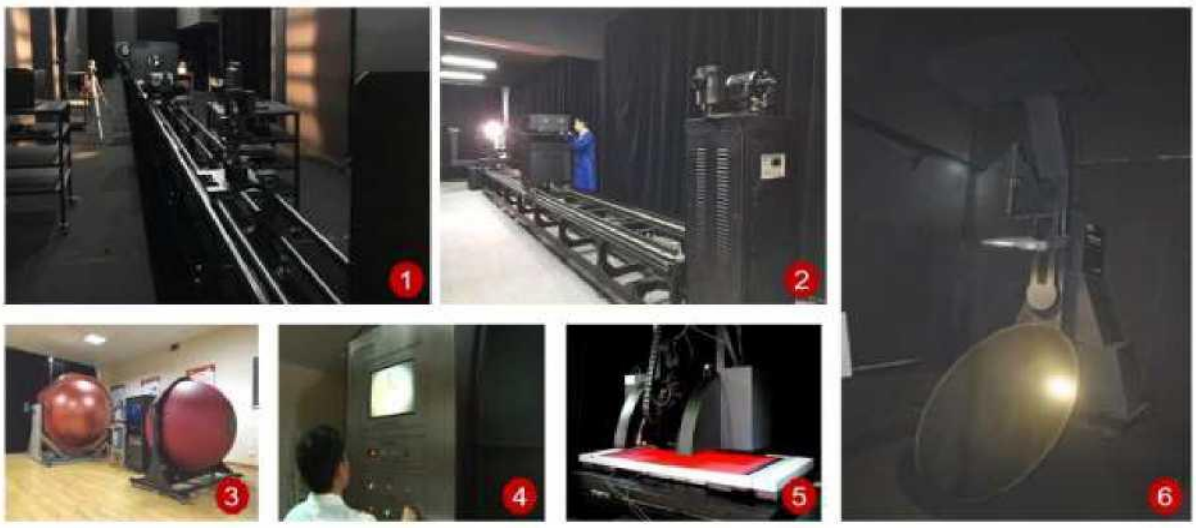
Energy Efficient Lighting Products

This laboratory is accredited in accordance with the recognized international Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2018-10-30 through 2018-09-30
Effective Dates

For the National Voluntary Laboratory Accreditation Program





④ 30 m Optical metrology bench system
⑤ Automatic photobiological safety evaluation
⑥ Photometric & Colorimetric measurement sphere

① 3.0 m thermostatic photometric sphere
② Flat panel display measurement stage
③ 2.8 m meters mirror goniophotometer

SENSING

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