

ACS 586

LED luminance standards

Key features at a glance

- ▲ Stable LED light source for calibrating filter-based and spectro-radiometric luminance meters
- ▲ Uniform luminance with Lambertian distribution via diffuser and integrating sphere
- ▲ Internal storage of reference values, spectrum and operating parameters

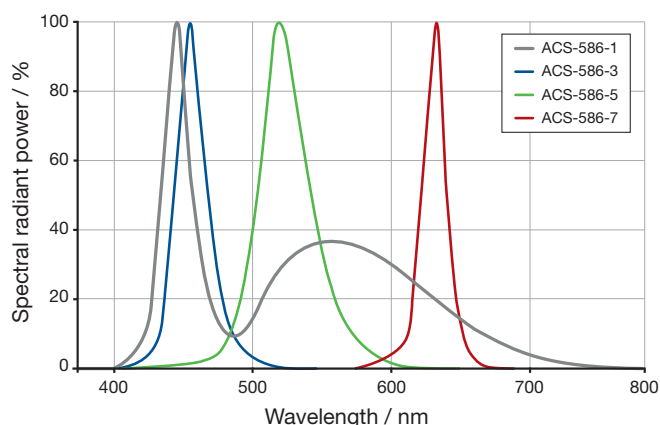


The ACS 586 is a newly developed, highly stable LED luminance standard. It supports the testing of all luminance meters, both filter-based and spectroradiometric. Radiation from the high-power LED is emitted into an integrating sphere (inner diameter: 100 mm) through a diffuser. The inner coating of the sphere further homogenizes the light and emits uniform luminance through a 25 mm aperture. This design ensures Lambertian radiation characteristics. Reference values, the emission spectrum, all relevant operating parameters, and the accumulated operating time are stored within the ACS 586.

\\ MODE OF OPERATION

The high-power LED in the ACS 586 is temperature-stabilized using a thermoelectric (TEC) element. Heat is dissipated by an integrated fan, ensuring stable operation at 250 mA and 35 °C, controlled via dedicated software. The LED emits light into an integrating sphere (Ø 100 mm) through a diffuser. The sphere's inner coating homogenizes the radiation and emits uniform luminance through a 25 mm aperture, resulting in Lambertian distribution. All reference data, including spectrum, operating parameters, and tracked usage time, are stored in the device and accessible via software.

Thanks to its stability and uniformity, the ACS 586 is ideal for calibrating and verifying filter-based and spectroradiometric luminance meters.



\\ ACU CONTROL UNIT

The ACU is a new compact control unit for ACS calibration standards from Instrument Systems. It contains a high-precision constant current source in a compact desktop housing in addition to a TEC controller for accurate temperature stabilization.

The ACU has been developed for both laboratory and production use. The ACU is controlled by means of a computer via USB using the ACS Control software. Both, Windows 10 and OS X operating systems are supported.

Moreover, the relevant program libraries (.dll and .dylib) are available for direct access for both operating systems Windows and OS X.



▲ The spectrum of the ACS 586

▲ ACU 100 control unit

TECHNICAL SPECIFICATIONS

LED luminance standard	ACS-586-1	ACS-586-3	ACS-586-5	ACS-586-7
Color of light emitted	White	Blue	Green	Red
Typical correlated color temperature CCT / Dominant wavelength ¹⁾	CCT: 5000 – 6000 K	480 nm	530 nm	622 nm
Diameter of the light emitting aperture	25 mm	25 mm	25 mm	25 mm
Typical luminance	400 – 660 cd/m ²	100 – 200 cd/m ²	300 – 400 cd/m ²	120 – 160 cd/m ²
Measurement uncertainty luminance ²⁾	±2 %	±2 %	±2.1 %	±1.9 %
Temporal stability of luminance	0.2 % / 100 h; ±0.5 % / 300 h	0.2 % / 12 h; 0.5 % / 100 h	0.2 % / 12 h; 0.5 % / 100 h	0.2 % / 12 h; 0.5 % / 100 h
Temporal stability of color coordinates x and y	0.0002 / 100 h; ±0.0005 / 300 h	0.0002 / 12 h; 0.0005 / 100 h	0.0002 / 12 h; 0.0005 / 100 h	0.0002 / 12 h; 0.0005 / 100 h
Spatial uniformity ³⁾ deviation from photometric average value in reference to the center	< ±0.5 %	< ±0.5 %	< ±0.5 %	< ±0.5 %
Turn-on stabilization time	< 240 s	< 240 s	< 240 s	< 240 s
Recommended recalibration interval	300 operating hours or one year	After 100 operating hours or one year after last calibration		
Typical sensitivity to ambient temperature variation (luminance)	< 0.15 % / 10 K	< 0.15 % / 10 K	< 0.15 % / 10 K	< 0.25 % / 10 K
Typical sensitivity to ambient temperature variation (color coordinates x, y)	< 0.0001 / 10 K	< 0.0002 / 10 K	< 0.0002 / 10 K	< 0.0001 / 10 K

¹⁾ Measurement uncertainty color coordinates (determined with DTS with CAS 140D): white x ±0.0007 / y ±0.0008, blue & red x / y ±0.001, green x ± 0.001 / y ±0.0015

²⁾ Exact value determined with DTS with CAS 140D

³⁾ Determined with LumiTop 2700, distance 50 cm, FOV 15 mm, max. translation from center ±10 mm

Please note: Audit limits for usage of ACS in production lines depend on device tested, ACS model, environmental conditions and process maturity.
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