



CIE DIS 025/E:2014

DRAFT INTERNATIONAL STANDARD

**Test method for LED lamps,
luminaire and modules**

Tony Bergen

Commission Internationale de l'Eclairage (CIE)



Who is the CIE???

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- The CIE is the International Commission on Illumination
- It is the global peak body on the science and art of light and lighting
- The CIE is about...
 - LIGHT & VISION & COLOUR
 - SCIENCE & STANDARDS
 - KNOWLEDGE TRANSFER & QUALITY ASSURANCE
- **The CIE is now over 100 years old!**

Role in Standardisation

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- The ISO has delegated standardisation in lighting and colour to CIE
 - IEC develops **PRODUCT STANDARDS (IEC TC34)**
 - CIE develops **FUNDAMENTAL AND APPLICATION STANDARDS**
- This gives our standards and other publications relevance and weight for National standards organisations

CIE's Scientific Divisions

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- The CIE has seven scientific divisions:
 - D1: Vision and Colour
 - D2: Measurement of Light and Radiation
 - D3: Interior Environment and Lighting Design
 - D4: Lighting and Signalling for Transport
 - D5: Exterior Lighting and Other Applications
 - D6: Photobiology and Photochemistry
 - D8: Image Technology

Division 2 Technical Committee: TC2-71

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- TC2-71 is a CIE Division 2 Technical Committee
- It has created the CIE International Standard Test Method for LED Lamps, LED luminaires and LED modules
- The TC has 37 members from 16 countries in 5 continents
- Working closely with CEN-TC169-WG7
- Was published in draft form (and therefore able to be referenced) in 2014
- The final version will be published (subject to final voting) March 2015

CIE Test Method: Aim

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- Currently there are many different test methods used in different areas around the world:
 - IESNA LM-79-08
 - EN test methods
 - IEC 62722, IEC 62612, IEC 62717
 - JIS C 7801 Amendment 1: 2012, JIS C 8152-2
 - Chinese CQC and GB standards
 - etc.
- Aim: A unified global standard for harmonisation of testing of LEDs and SSL products
- **The new CIE Standard can (and should) be referenced by any new LED lighting regulations and standards**

CIE Test Method: Purpose

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- The draft Standard defines standard test conditions for measurement and requirements for equipment
- It covers electric, photometric and spectral/colorimetric properties
- Testing should ideally be performed according to the defined standard test conditions, but it allows for corrections when the standard test conditions are not met
- So... it really just focuses on quality and compatibility of measurement, and not product performance as such.

CIE Test Method: What it covers!

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- The draft Standard covers:
 - Environmental conditions (air temperature, air movement, stray light);
 - Electrical supply and quality;
 - Measurement instruments (photometric & electrical);
 - Lamp mounting / operating position;
 - Lamp Operating Conditions;
 - Lamp stabilisation;
 - Initial total luminous flux;
 - Centre beam and beam angles;
 - Partial luminous flux (useful lumens);
 - Test distance for far-field goniophotometry;
 - Colour and chromaticity measurements.

CIE Test Method: What it doesn't cover...

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- The draft Standard does not cover or partially covers:
 - Dimmable, internal feedback, adjustable colour, adjustable white, multicolour;
 - Maintained luminous flux;
 - Omni-directional assessment;
 - Maintained colour measurements;
 - Harmonics & EMC;
 - Start time / activation time;
 - Switch withstand;
 - Lamp Life;
 - Temperature cycling shock;
 - Endurance;
 - Photobiological hazards;
 - Flicker;
 - Dimmer compatibility.
- Note: Many of these are already covered satisfactorily in other Standards.

CIE Test Method: Compared with LM-79

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- IESNA LM-79-08 was an important document
- It led the way in measurement of SSL devices
- Compared with LM-79, the CIE test method:
 - It is more thorough and rigorous;
 - It is globally representative;
 - It is an internationally recognisable standard.

CIE Test Method: Measurement Quality

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- Measurements must be traceable
 - Equipment must be properly calibrated
 - Traceability chain must be maintained back to a national laboratory (National Measurement Institute)
- All test reports must contain a statement of uncertainty of measurement
 - Recognition that a measurement by itself is meaningless without a statement of the measurement uncertainty
 - The standard gives a guide for factors to consider when making an uncertainty budget
 - World first?

Finally... Shameless Advertising

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CIE Quadrennial Session (Major meeting and Conference)

Manchester, England, 28th June to 4th July 2015

CIE Lighting Quality & Energy Efficiency Conference & Divisions 2, 4 and 5 Annual Meetings

Melbourne, Australia, 3rd to 9th March 2016

More information <http://www.cie.co.at/>

Thank you for your kind attention

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