



LED Standards Worldwide

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LED Standards Worldwide

- What attributes might need performance limits / test methods?
 - Flux
 - Light Distribution
 - Efficacy
 - Lumen maintenance
 - Colour – CRI
 - Colour – CCT / matching
 - Colour – maintenance / stability
 - Colour – spatial uniformity
 - Colour – spectral output
 - Colour – UV
 - Life – lifetime
 - Life – premature failure
 - Life – rapid cycle switching
 - Life – end of life behaviour
 - Electrical – dimming / controls
 - Electrical – power factor & harmonics

Categories of Standards

- Safety
- Performance (manufacturer claims, test methods)
- Quality (absolute limits)

What Standards Exist for LEDs?

- IEC standards mentioned by Owen
- Also IEC standards for LED connectors and control gear
- Other known performance standards
 - Japan
 - JIS C 8155, LED module for general lighting service
 - TS C 8153, White light emitting diode devices for general lighting – performance specifications
 - JIS C 8157, Self-ballasted LED lamps for general lighting services – performance requirements

What Standards Exist for LEDs?

- “Quality” LED standards
 - ANSI C78.377-2008, Specification for Chromaticity of SSL Products
 - ENERGY STAR® Program Requirements , for Residential Light Fixtures - Eligibility Criteria – Version 4.3
 - EPA ENERGY STAR® Program Requirements for Solid State Lighting Luminaires - Eligibility Criteria – Version 1.1
 - **EPA first draft ENERGY STAR Luminaires specification, to replace the Residential Light Fixtures (RLF, V4.3) and Solid State Lighting (SSL, V1.1)**
 - DoE ENERGY STAR® Program Requirements for Integral LED Lamps, DRAFT
 - UK Energy Saving Trust - LED Requirements for Replacement Lamps and Luminaires

What Standards Exist for LEDs?

□ LED test methods

- CIE Technical Report 127-2007, Measurement of LEDs (2nd ed)
- IESNA LM-79-2008, Approved Method for the Electrical and Photometric Measurements of Solid State Lighting Products
- IESNA LM-80-2008, Approved Method for Measuring Lumen Maintenance of LED Light Sources
- ASSIST May 2008, Recommendations for Testing and Evaluating White LED Light Engines and Integrated LED Lamps Used in Decorative Lighting Luminaires, Volume 4, Issue 1 May 2008 Revised April 2009
- JIS C8152 & JEL311, Measurement methods and photometry for white light LEDs
- Note that many IEC performance standards include test methods

Asian LED standards?

- China Street Lighting LEDs?

Your Thoughts?

