Solid State Lighting Quality Scheme

LED Workshop
Canberra, 29 November 2010
Lighting Council Australia actively involved in LED issues

• Formed Solid State Lighting Sub-industry Group
  - Lighting Council’s largest Sub-industry Group
  - Charter includes promotion of SSL industry and education of stakeholders and the public

• LED standardisation
  - Lighting Council Australia’s Technical Manager member of Standards Australia Committee EL/41 and IEC TC34

• Member of Global Lamp Forum’s LED Working Group
  - inaugural meeting Shenzhen October 2010
  - 2nd meeting Bangkok December 2010

• Introduced LED certification program
  - SSL Quality Scheme
Rise and rise of LEDs

- Over the past decade significant resources dedicated to LED R&D and manufacturing
  - driven by promise of energy efficiency and longevity, promise of lucrative new markets
  - encouraged by national governments (China, Korea, Taiwan etc)
- Proliferation of LED manufacturers
- Overwhelming preponderance of LEDs at 2010 Light + Building (Frankfurt) and Guangzhou International Lighting Fair
- Many LED products now entering Australian market
LED Quality Issues

Some excellent LED products now on the market, but many poor quality products and unsubstantiated claims:

‘Many [LEDs] perform poorly or have failed to meet the specifications for the application that they were designed for.’ (Queensland University of Technology after LED testing in 2009)

‘The market is flooded with LED products claiming to replace conventional lamps and luminaires. Many genuinely achieve this, but most fall far short’ (James Hooker, paper given at CELMA/ELC LED Forum, 14 April 2010)

‘LED quality is needed to ensure consumers accept this technology and not feel cheated by poor light quality, short life time, and other possible problems’ (Dr Paulo Bertoldi, Energy Institute, European Commission)
Why do some LEDs have quality problems?

• Complex technology creates manufacturing challenges – for example:
  - thermal management a major issue, hence adequate heat sinking is critical
  - degradation in LED material and phosphors can lead to colour shift
    (important for side-by-side applications such as wall washers or an LED array)
  - LEDs are a point source of light, hence excel in applications such as traffic lights and vehicle brake lights – however general illumination is much more challenging

• Immaturity of LED standards
  - for example, no effective lifetime test

• Many new manufacturing entrants lack an understanding of lighting
Lighting Council Australia’s response

• Lighting Council keen to promote LED technology
  - significant environmental benefits

• Concerned that consumers will have a poor reaction to LEDs
  - threatens to undermine consumer confidence and impede uptake
  - want to avoid early experience of CFLs

• As a consequence Lighting Council has introduced a certification program for LEDs – the SSL Quality Scheme
SSL Quality Scheme

• Industry-led, voluntary scheme based on US Department of Energy ‘Market Facts’ program
• Intended to provide confidence to the market that a luminaire carrying the Scheme’s label matches performance claims made by supplier:
  ❖ Luminaire efficacy
  ❖ Light output
  ❖ Measured input power
  ❖ Correlated colour temperature
  ❖ Colour rendering index
LED Performance
Solid State Lighting Luminaire

Luminous Flux
840 lm
Luminous Efficacy
93 lm/W

INPUT POWER
9 W

TEST VOLTAGE

Colour
Correlated Colour Temperature (CCT) 3100 K
Colour Rendering Index (CRI, Ra) 87

LIGHT COLOUR
Correlated Colour Temperature (CCT)
3100 K WARM WHITE

VISIT
www.lightingcouncil.com.au
for the Label Reference Guide

The specifications above are contained in certified or accredited reports provided to Lighting Council Australia Ltd by the manufacturer/supplier of this product. Lighting Council Australia makes no representation as to the product’s specification or suitability.
**Luminous Flux**
Light output, measured in lumens.

**Luminous Efficacy**
Measures efficiency. The higher the number, the more efficient the product.

**LED Performance**
Solid State Lighting Luminaire

- **Luminous Flux**: 840lm
- **Luminous Efficacy**: 93lm/W
- **Input Power**
  Measures energy required to light the product. The lower the wattage, the less energy used.
  - **9W**

**TEST VOLTAGE 230V AC**

**Colour**
- Correlated Colour Temperature (CCT)
- Colour Rendering Index (CRI, Ra)
  - 3100K 87

**Correlated Colour Temperature (CCT)**
Measures light colour. ‘Warm White’ 2600-3200K; ‘Cool White’ >3200-4500K; ‘Daylight’ >4500K

**Colour Rendering Index (CRI)**
Measures colour accuracy on a scale of 0-100. Colour rendition is the effect of the lamp’s light spectrum on the colour appearance of objects.

**Test Voltage**
Voltage at which luminaire is tested to determine Input Power.

**VISIT**

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Miniature Labels
SSL Quality Scheme

Eligibility for Scheme Participation

• The Scheme is open to financial members of Lighting Council Australia and Lighting Council New Zealand.

• All participants must be a registered entity under Australian or New Zealand corporations law.
SSL Quality Scheme

Process for Acquiring Label

• Supplier submits Application for SSL Quality Scheme ID Number

• After receiving SSL Scheme ID Number supplier submits:
  Application to Register SSL Product together with supporting evidence
  Supplier’s declaration agreeing to be bound by the conditions of the scheme and confirming that the product to be supplied is the same as that tested
  Registration fee

• Lighting Council’s Secretariat reviews documentation and if deemed to satisfy the Scheme’s requirements authorises use of the label with specified values for a period of three years.

• Lighting Council’s Secretariat adds details of the registered product to public area of Lighting Council’s website dedicated to the SSL Quality Scheme.
SSL Quality Scheme

Scheme requirements

Applicants must provide:

A: US Department of Energy certification document and product datasheet
OR
B: UK Energy Savings Trust certification document and product datasheet
OR
C: LM79 photometric report from a NATA accredited laboratory with the following supporting documents:
   • LED supplier data sheet and binning document (outlining bin range used)
   • Driver supplier data sheet with certificate of compliance

Important note: Only applications for luminaires that constitute a system will be accepted – that is, a fully integrated mains connected (230 V AC) luminaire OR luminaire plus power supply.
Thank you

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