lites.asia Regional Lighting Policy Meeting

Bangkok, Thailand

3 - 4 February 2015

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Australian Update

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Street Lighting

- Australian / New Zealand Road Lighting Standard (AS/NZS 1158) currently under review
- The standard is not mandatory, but is usually the default standard specified by customers for new street lighting designs in Australia
- To assist the review a report was commissioned to assess existing international methodologies, standards and guidelines for establishing energy efficiency requirements for streetlight and identify options that may be suitable for application in Australia and New Zealand
- www.energyrating.gov.au/products-themes/lighting/lighting-products-meps-and-other-requirements/street-and-public-lighting/

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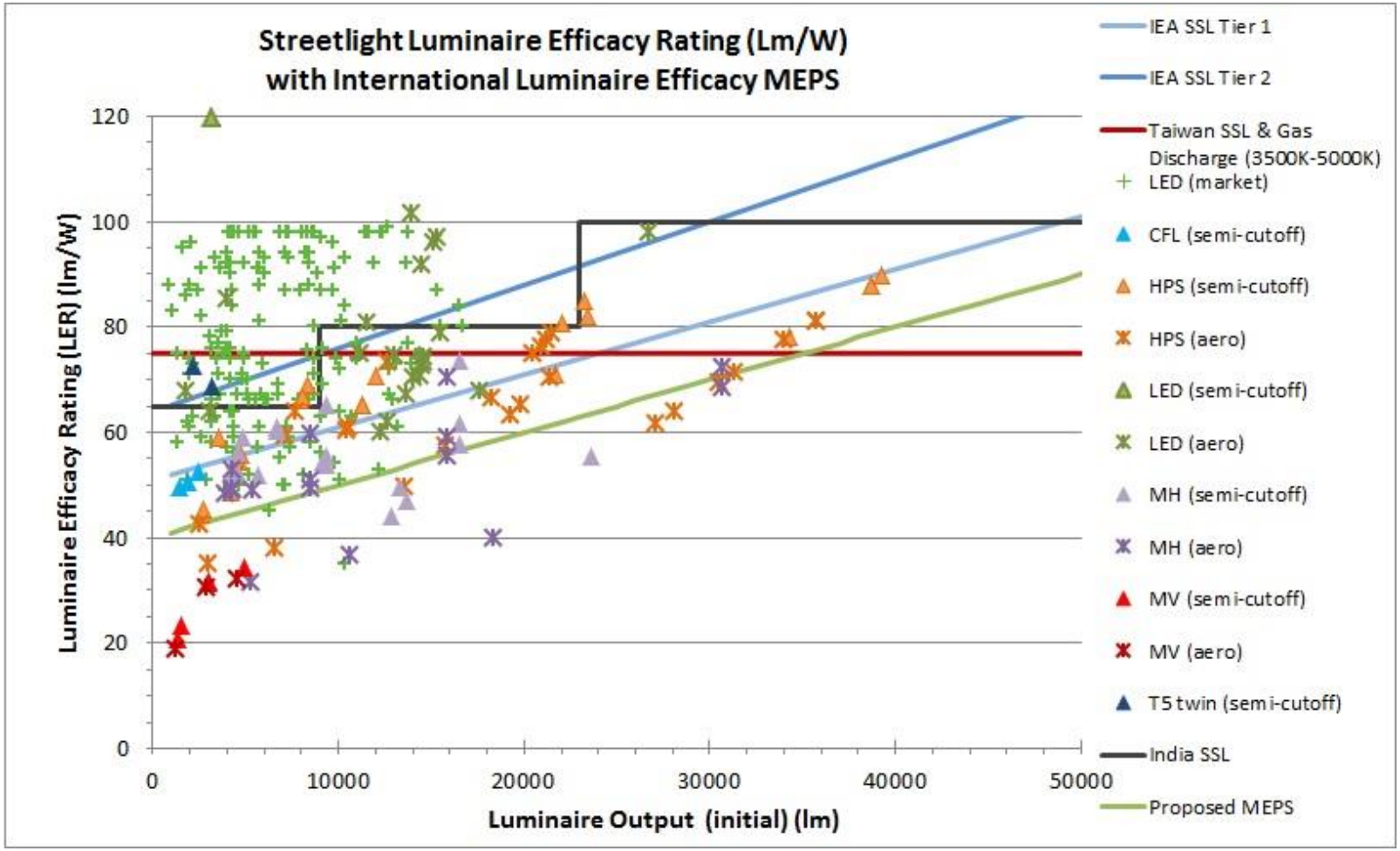
- The report assessed several international examples of methodologies and performance levels from Europe, North America and Asia and recommended a threefold approach to improved energy efficiency:
  - Minimum luminaire efficiency rating, placed as a normative requirement in the current standard AS/NZS 1158.
  - Normative disclosure of a road design energy efficiency classification scale (but with neither a normative nor mandatory minimum performance level).
  - Voluntary selection of preferred solution by procuring agency.

Street Lighting

- The proposed efficiency rating would remove from the market luminaires using mercury vapour, as well as a small range of metal halide LED and high pressure sodium aeroscreen models. All CFL, twin T5 linear, and HPS in semi-cut-off fittings would meet the minimum rating, as well as most metal halide, LED fittings and HPS aeroscreen luminaires.
  - The luminaire efficacy rating (LER) is a measure of the efficacy of the luminaire.
  - Luminaires shall have a LER ≥ 40 + (0.001 x Φ)Φ), where Φ is the total initial luminaire luminous flux.
  - To calculate the LER for a specific luminaire the total initial luminaire luminous flux is divided by the total luminaire power input.

Street Lighting



Street Lighting

- The proposed efficiency rating has subsequently been inserted by Standards Committee LG-002 into a draft revised version of AS/NZS 1158.6 which is currently out for public comment.
- The proposed **voluntary road design disclosure classification system** would provide an energy star rating for a street lighting installations,
  - could be requested as part of a tender process and used to inform selection.
- Modelled on the Netherlands' approach and recognises that it is not always the most efficient luminaire that will result in the most efficient overall streetlight installation (due to pole spacing, and other requirements).

Street Lighting

- While the Netherlands system refers to the EU (A+++ to G) EE classifications, we have modified to be used as a star rating system more familiar to Australia

$$\text{RLE} = \frac{\text{system power}}{\text{average maintained horizontal illuminance} \times \text{area}} \left(\frac{W}{lux.m^2}\right)$$

AU/NZ Star Rating	Netherlands Label	Illuminance based designs RLE or SLEEC (W/lux/m^2)		Luminance based designs RLE or SLEEC (W/(cd/m^2)/m^2)
★★★★★★★	A	0.01	(0.005-0.014)	0.15
★★★★★★	B	0.02	(0.015-0.024)	0.3
★★★★★	C	0.03	(0.025-0.034)	0.45
★★★★	D	0.04	(0.035-0.044)	0.6
★★★	E	0.05	(0.045-0.054)	0.75
★★	F	0.06	(0.055-0.064)	0.9
★	G	0.07	(0.065-0.074)	1.05

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- The proposal also includes a calculation to quantify the energy efficiency that may be achieved due to the dimming to produce the typical time weighted dimming level (Dim_{ave}) for an installation:

$$Dim_{ave} = \frac{\sum_{j=1}^{n}(Dim_j \times t_j)}{\sum_{j=1}^{n} t_j}$$

t_j is the time of operation during dimming period j

Dim_j is the dimming level (as a percentage) during dimming period j

- A one page road lighting energy efficiency report is proposed as part of the lighting design and could be incorporated into commonly used road lighting design software if adopted.
- This proposed system is currently being trialled against a range of actual Australian lighting designs to evaluate.

Lighting MEPS Review

- Incandescent, Halogen and Compact Fluorescent Lamps Product Profile
  - Reviews the MEPS program for incandescent, halogen and compact fluorescent lamps and discusses a number of policy options for the future direction of the program.
  - It is projected that a revised MEPS for incandescent, halogen and compact fluorescent lamps, by further shifting the market from incandescent lamps to efficient lighting such as CFLs and LEDs, could help reduce residential lighting energy use by approximately 65%
  - **Online consultation: 25 November 2014 to 13 February 2015**
  - www.energyrating.gov.au/products-themes/lighting/

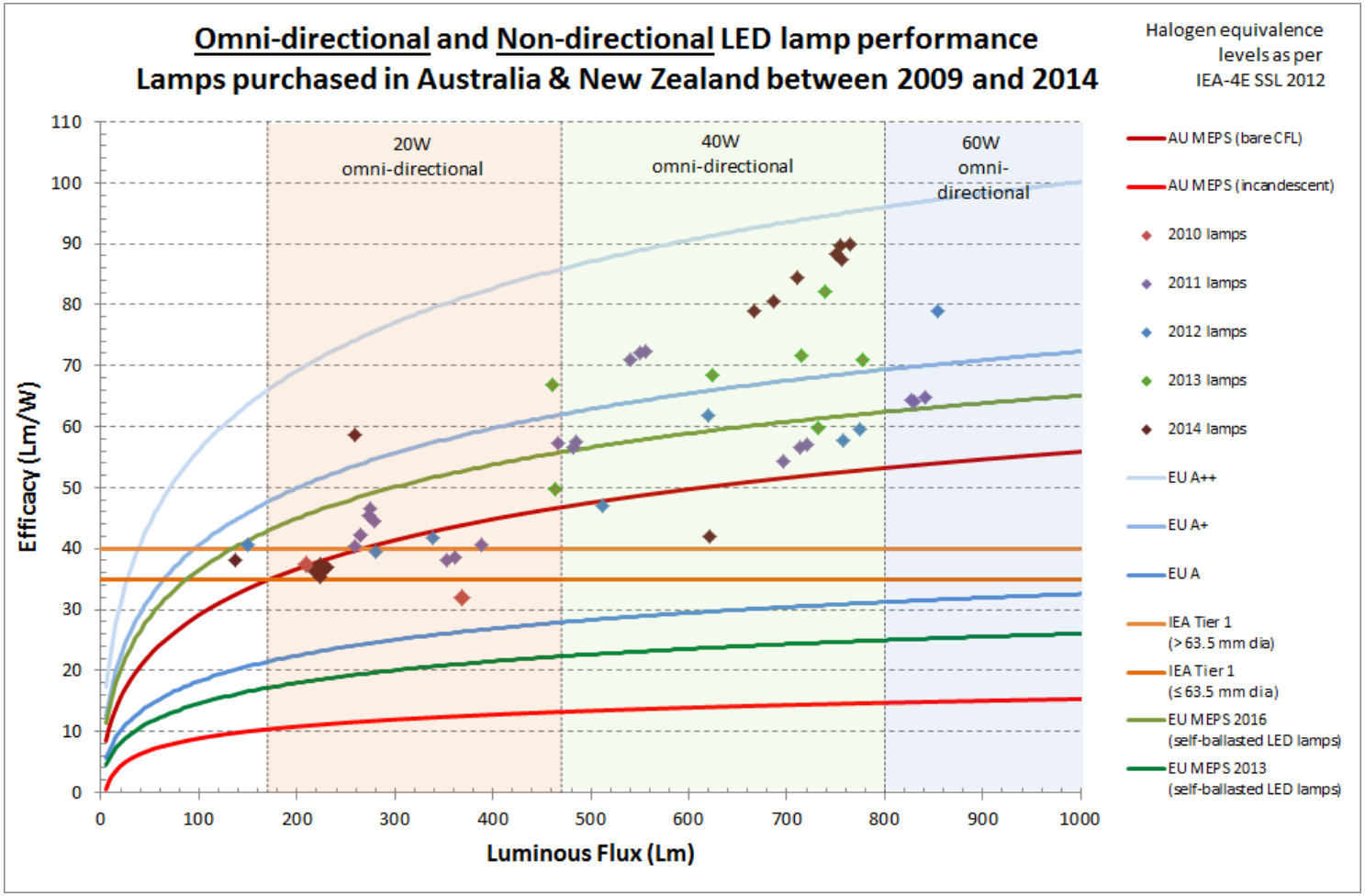
Review Options

- Development of MEPS in Australia to phase out incandescent and halogen lamps and replace with CFL/LED technology, with a staged implementation in different lamp categories as and when LED technology has matured sufficiently.
- An incremental increase in Australia and New Zealand in the efficacy of MEPS for CFLs, taking into account current market performance.
- Alignment of MEPS levels (or parts thereof) with the European Union.
- Regulatory or voluntary approach in Australia that all new luminaires sold are fitted with MEPS-registered CFL or LED lamps.

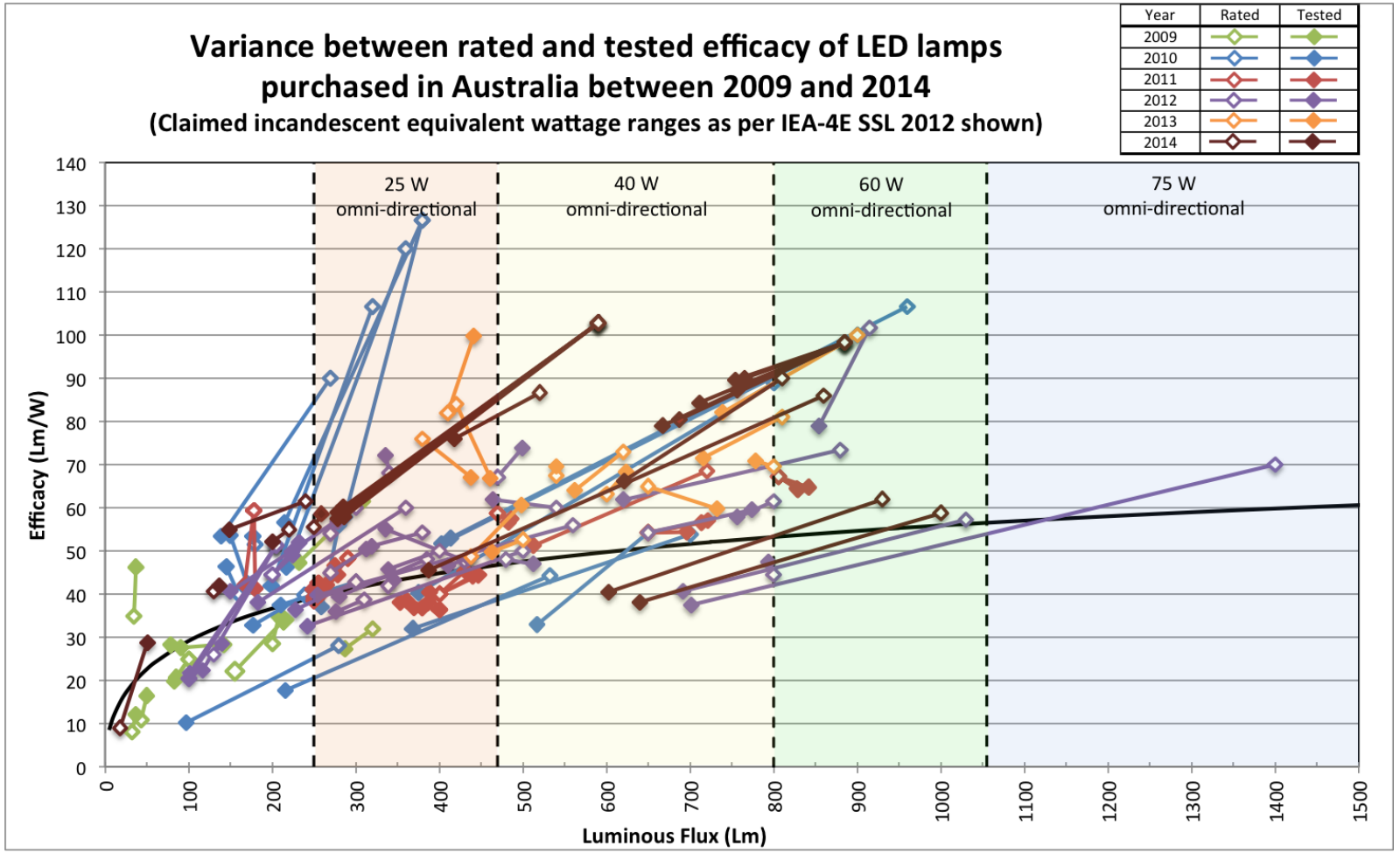
LED Testing Update

- Australia has been testing a range of LED lamps since 2009.
- While the last several years have shown an improvement in tested LED performance, this year we aimed to select a broader range of LED products
- Results show that there are still significant quality problems in the market:
  - In some cases tested lumen output close to half rated value
  - More than half of products had CRI below 80
  - In some cases significant differences between rated and tested beam angles for directional lamps
  - Some issues with accuracy of claimed colour temperature

LED Test Results



LED Test Results



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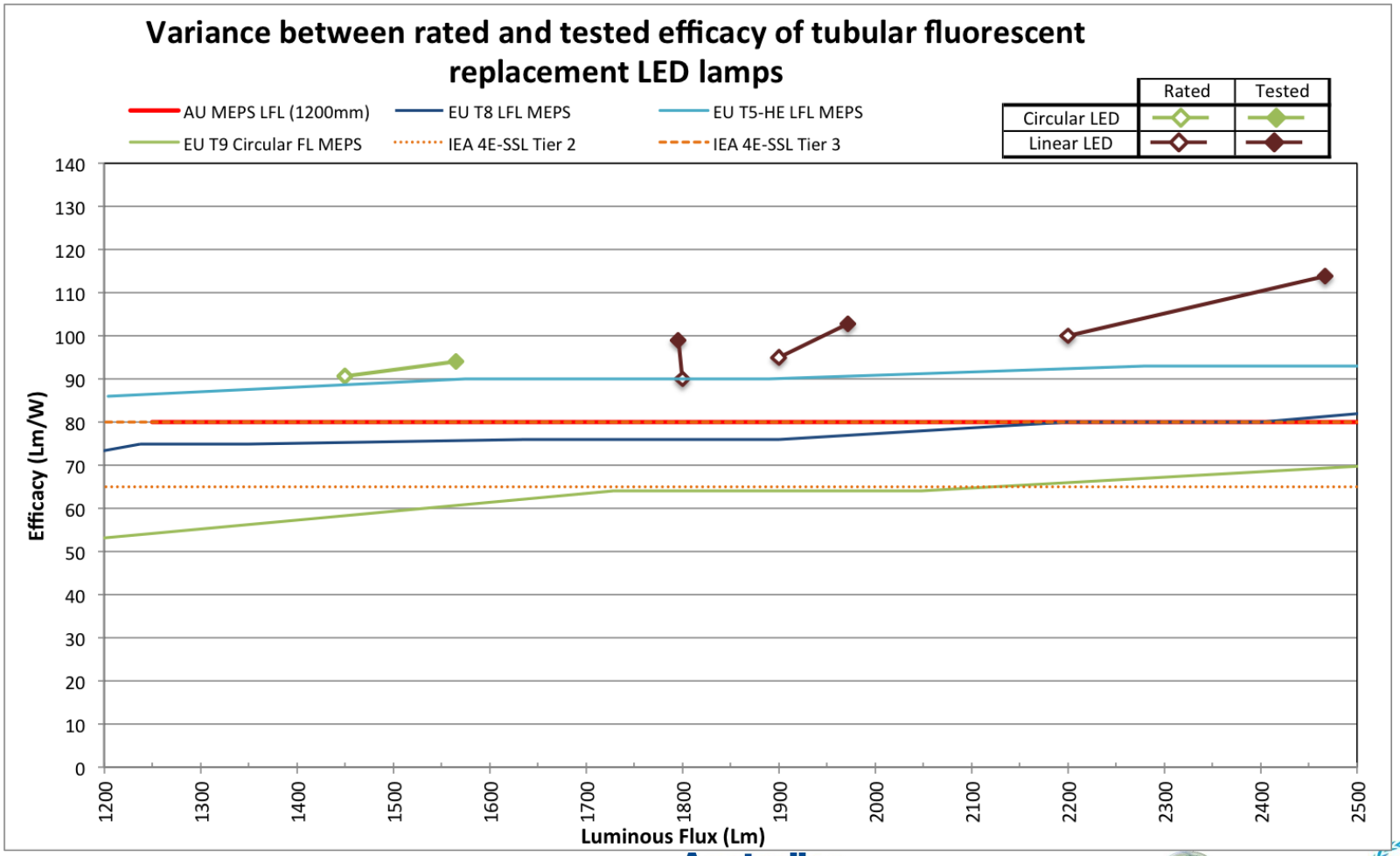
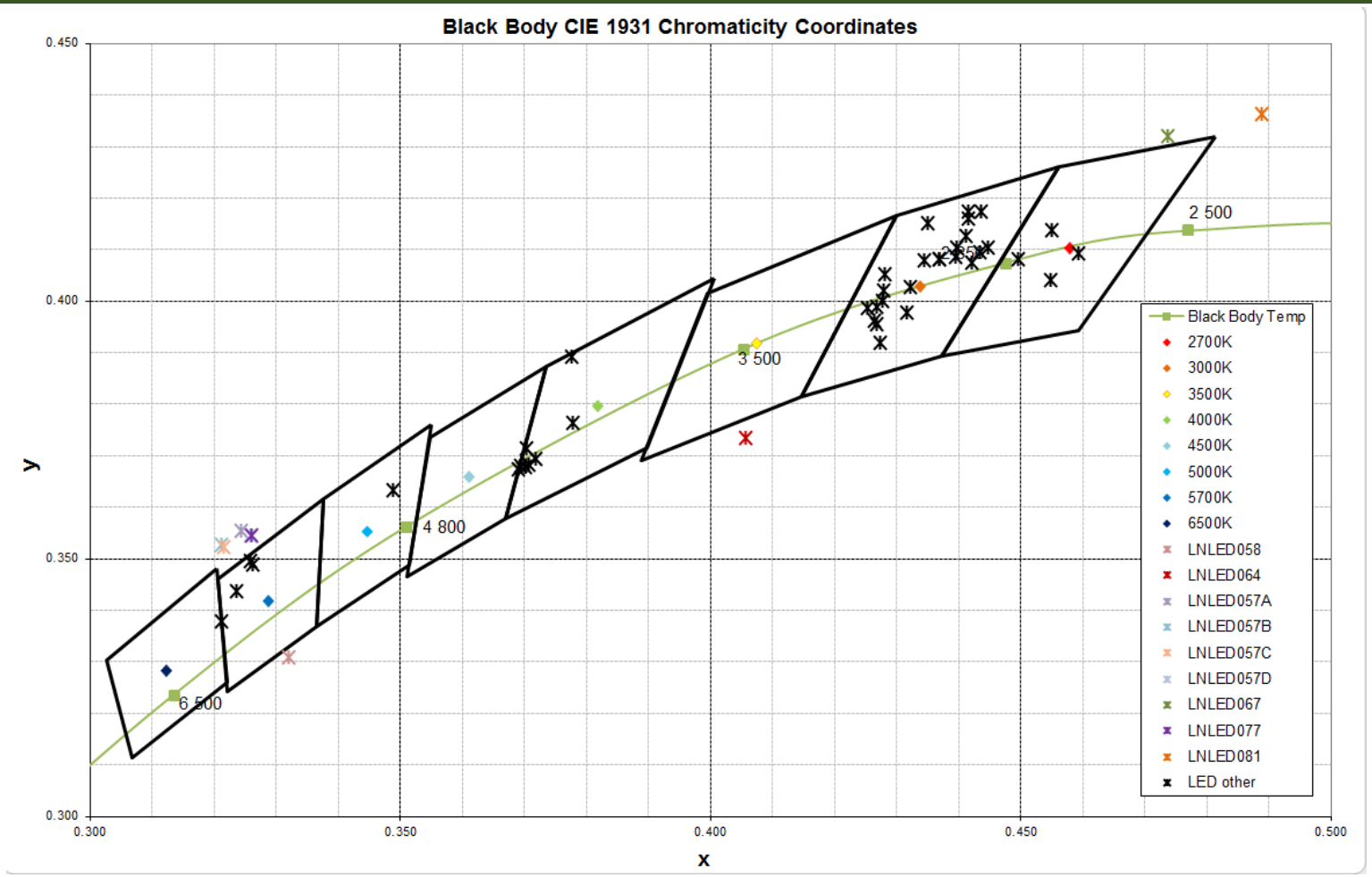
LED Test Results – Tubular Flourescent



LED Test Results – Colour Temperature



LED Product Profile

- A Product Profile (discussion paper) on options for LED lighting will soon be released. Similar to the Incandescent / LED report, this will look at the LED market in Australia and New Zealand and examine whether Government action is required in order to:
  - Ensure optimal energy savings;
  - Ensure accurate information on product performance and equivalence is available so that consumers understand what they are buying;
  - Provide guidance on acceptable minimum performance levels;
  - Discourage the least efficient LEDs that may potentially be less efficient alternatives to more efficient LEDs and already proven efficient lighting (such as CFLs) for uninformed consumers.

Thankyou

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