

Welcome





IEA 4E SOLID-STATE LIGHTING ANNEX

Marc Fontoynont, Operating Agent November, 2011

IEA IMPLEMENTING AGREEMENT EFFICIENT ELECTRICAL END-USE EQUIPMENT





TASK 1: QUALITY ASSURANCE

Minimum Performance requirements for 4 product categories

(released for comment November 1, 2011)















Downlight **Fixtures**

LED Linear **Fluorescent** replacement lamps

DEFINING PERFORMANCE TIERS

- Tier 0: Minimum Acceptable Performance for Off-Grid Applications
- Tier 1: Minimum Acceptable Performance for Grid-Connected Applications
- Tier 2: Performance Required by Established Quality Programs
- Tier 3: Current Highest Commercially Available Performance
- Philosophy: health aspects non negotiable, SSL products' performance shall be higher than the products they replace.



WHO DOES WHAT?





THANK YOU!

http://ssl.iea-4e.org/

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Discussion on National Consumer Communication Activities

Led by Nils Borg



Key LED performance Criteria for the Region

Steve Coyne



		Japan	India	Philippines		Pacific Islands	Korea	Vietnam	Sri Lanka		Singapore		Indonesia	Thailand	Bangledesh Australia		Equipment	integrating sphere	photometer	power meter	colour meter	Goniophotometer	spectrometer
Lifetime	Х	>	<	Х	Х	Х		Х	Х	Х	XX		Х	Х	Х	11		0	0				
Efficacy	Х			Х		Х		Х	Х	Х		Х	Х	Х	Х	10		0	0	0			
Colour (CCT)	Х			Х				Х		Х	Х	Х	Х		Х	8		0			0		
Colour (CRI)	Х			Х				Х		Х	Х	Х	Х		Х	8		0				C	D C
Cost to Buy		>	<		Х	Х		Х	Х		Х		Х	Х		8							
Warranty		>	<		Х	Х				Х	Х		Х	Х		7							
Power/Wattage					Х	Х		Х			Х	Х				5				0			
Total Light Output	Х	>	<									Х			Х	4		0	0				
Application				Х			Х				Х				Х	4							
Energy Saving		>	<					Х						Х		3							
Product Accreditation										Х				Х		2							
Health						Х									Х	1							
Environment						Х									Х	1							
Delivering Claims				Х												1							
Cost to Run				Х												1							
Base							Х									1							
Power Quality/Stability of							Х																
Voltage																1				0			
Payback										Х						1							
lechnical Support										Х						1							
Flicker															X	1							0
Dimmibility/Control															X	1		0	0	0			0
Brightness															Х	1							
Lumen Maintenance																_		0	0				
Light distribution																_			0		C)	
Beam angle																_			0		()	
Colour spatial uniformity																							

Oscilliscope

LEDs: Guide for the Consumer

My Ton: Strategic Advisor – lites.asia



Presentation Overview

□ A Guide for the Consumer for Choosing Quality LEDs:

- Intended for laypersons
- Provides basic information on:
 - Quality
 - Incandescent equivalence or light output
 - Life and warranty
 - Color quality
 - Efficiency
 - Safety
- Additional parameters?
- Other considerations.



What GENERAL information is needed to guide the consumer?

Some Technology & Industry information:

- LED technology is rapidly developing.
- LEDs offer useful alternatives to some traditional lighting application.
- Testing indicates that there is a wide variation in quality.
- Lower quality LEDs may not provide enough light or good quality light.
- Lower quality LEDs may be less energy efficient than other types of lighting such as compact fluorescent lamps.
- Consumers can find quality LEDs if they know what to look for.

What INDICATORs are needed to guide the consumer?

□ Some key indicators for LED quality:

- Test reports or certification.
- Lack of extravagant claims regarding performance.
- Price.

However, these do not guarantee the product is high in quality. It simply indicates it might be better than a product without the label.

Olites.asia

What PERFORMANCE PARAMETERS are needed to guide the consumer?

Some Common Performance Indicators:

- Incandescent Lamp Equivalence Claims: The best LEDs are currently about 4 to 5 times more efficient than typical incandescent lamps. A common table is needed.
- **Light Output:** Rated output in lumens are the best, most accurate way to compare two different types of lamps.

□ The information on the box is not always very accurate.

What PERFORMANCE PARAMETERS are needed to guide the consumer?

Some Common Performance Indicators:

- Lamp Lifetime (hrs). For high quality LED products at a reasonable price, the expected (and more believable) lifetime in the range of 10,000 to 20,000 hours
- Lamp Warranty Period (yrs). The warranty period that a manufacturer is willing to provide is a good approximation for lifetime.

Manufacturers must be able to back up their performance claims with proof of testing or other qualifications.



What LIGHT APPEARANCE CHARACTERISTICS are needed to guide the consumer?

Some Light Appearance Characteristic Indicators:

- **Color Temperature:** LEDs can actually produce white light in a number of "shades" – from warm-white to cool white or bluish white.
- Color Rendering Index. A CRI of at least 65 for outdoor use, and 80 or better for indoor use.
- The best way to judge is to see how the LED lights influence the colour of objects, and choose most comfortable light color.



What ENERGY EFFICIENCY CHARACTERISTICS are needed to guide the consumer?

□ The only Energy Efficiency Indicator:

- Light Source Efficacy. Energy efficiency is measured in Lumens per Watt (Im/W). The higher the number, the more efficient the product.
- Many LEDs currently on the market are similar to or a little less efficient than equivalent fluorescent lighting.
 Some poor quality LED lamps have been found to be only a little more efficient than incandescent lighting.
 Singapore, 3 November 2011

What SAFETY RATINGS are needed to guide the consumer?

Some Safety Rating Indicators:

- Safety Rating. At a minimum lamps must have passed mandatory requirements for safety marks, such as UL, CE, or national certification.

At a minimum, they should indicate compliance with IEC 62560 Ed. 1.



What ONLINE INFORMATION SOURCES are needed to guide the consumer?

□ Some information websites (ENGLISH ONLY):

- Energy Star: <u>www.energystar.gov</u>
- Top ten: <u>www.topten.info/</u>
- Lighting Facts: <u>www.lightingfacts.com</u>
- Energy Savings Trust: <u>http://www.energysavingtrust.org.uk/In-your-</u> <u>home/Energy-Saving-Trust-Recommended-products</u>

There are already some quality certification programs for LED lamps.

Have we got the RIGHT ORDER OF PARAMETERS needed to guide the consumer?

Current ordering:

- General information
- Performance parameters
- Light appearance characteristics
- Energy efficiency
- Safety
- Online or other sources of information

Which parameter/characteristic should be emphasized?



What OTHER information are needed to guide the consumer?

□ Some Other potentially useful consumer information:

- RoHS
- Safe handing & disposal
- Eye safety
- Dimming
- Compatibility
- Proper applications

□ Could risk overwhelming consumer.



Some other CONSIDERATIONS for a consumer guide?

- How should the information be packaged and delivered?
 - Brochure
 - Website
 - Retailer

□ Who should be the provider of this information?

- Manufacturers
- Suppliers
- Distributor/retailer
- National/Regional entity



□ Some other CONSIDERATIONS for a consumer's guide

What about regional cooperation?

- Harmonize parameters
- Common language/description

Who should handle questions or feedback?



- □ Some other CONSIDERATIONS for a consumer's guide
- What about policing and verifying claims?
- What about Coordination with other regions?
 - (LED Quality Charter, Lighting Facts)
- Should there be a separate guide for LEDs? What about a guide to energy efficient GLS options?



Questions? Comments?

Thank you!



Update on IEC Lighting Activities

David Boughey/Roberto Cristobal

Lites.asia meeting, Singapore, 3 Nov 2011



Background

- Lites.asia facilitates and encourages participation by Asia Region Countries in IEC:
- Technical Committee 34 Lamps and Related Equipment
 - □ Includes performance and safety standards for lighting.





□ Frankfurt, June 2011 – Technical Panel Meetings

Technical meetings that discuss the detail of new proposed standards and revisions of existing standards



Meetings Cont'd

- TC 34 Maintenance Teams Meetings
 - 17 21 Oct
 - □ PRESCO lamps
 - □ COMEX lighting controls
 - LUMEX luminaires
 - □ Lamp Caps and Holders
 - LED Terms and Definitions Project Team



TC 34 Structure





□ CFLi – IEC 60969

- Development of performance standard for CFLi
- □ Further developed at June meeting
- □ Revised draft discussed at October PRESCO
- Lites.asia participants have proposed that the standard include specified / minimum levels for performance parameters
 - □ Also proposed performance tiers
 - This has not been successful voted down in committee and not supported by PRESCO



- CFLi Standard currently includes test methods and performance parameters
 - Performance Parameters truth-in-claim only, with specified tolerances
 - □ Except for specific level for start-up time
- What is missing?
 - Tiered performance levels
 - Mercury limit and label
 - Extreme condition requirements (currently only truth-inclaim)



- PRESCO decided that due to number of comments remaining it will be circulated again as a CD draft.
- However unlikely committee will change position on specified performance.



□ Issues with Specified levels and tiers:

- Not seen as the role of TC34 / IEC to specify levels (although other IEC Committees have)
- Dresden Agreement requires EU to adopt IEC standards
 thus specified levels in IEC are not supported by some IEC European members
- Concern that regulators will mix and match levels from various tiers to require impossible lamp
- Concern that regulators will pick high performance tiers to adopt as minimum performance



- What next for CFLI?
- Technical paper?
 - □ Is not binding
 - □ Requires less voting support from committee
 - Tiered performance specifications in a technical paper could still provide guidance for harmonised country performance standards
 - But may be more difficult for national regulator to adopt automatically?
- Governments request specific action of TC34 / IEC? (See below)



LED Standards

- IEC has developed / is developing a range of LED safety and performance standards including:
- IEC/PAS 62717 LED Modules Performance (draft)
- IEC/PAS 6xxx LED Testing and prediction of lumen maintenance
 - □ Under development
 - Seeking predictive algorithms to shorten test period



LED Standards

- LED Terms and Definitions
- Working group to define LED terms such as
 - □ Die or chip
 - □ LED package
 - \square Module
 - \Box Lamp
- Still underway



LED Standards

- IE/ 62612 Performance Standard for selfballasted LED lamps >50 V (Published June 2010)
- LED performance standards similar in scope to CFLi
 specify parameters, require truth-in-claim and specify performance tolerances
 - Do not specify performance levels or tiers



Communicating with IEC

- Chair of TC34 suggested that if governments want TC34 to go further and specify performance levels they should communicate this to TC34
- So an option for groupings of governments to communicate (to TC34 or a higher IEC committee) the need for international standards containing tiered performance levels?
 - □ IEA governments?
 - □ Lites.asia governments?



Communicating with IEC

- Majority of TC34 country representatives are from lighting industry.
 - Lites.asia has provided an opportunity for regulators and policy makers in the Asia region to become familiar with IEC activities.
 - Would there be benefit in broader communication to raise awareness of TC34 activities with regulators in other parts of the world?



Next Meetings

- □ January 2012 panel meetings in Berlin
- March 2012 Maintenance Committee meetings New Zealand
- September 2012 Maintenance Committee meetings in Japan



Feedback from ASEAN Policy Makers

Indonesia:

- Mr. Bambang Setiadi President of the Indonesian National Committee of the IEC
- □ Mr. Abdul Rachman Hanafiah Secretary of the Indonesian National Committee
- Malaysia:
 - Mr. Datuk Ir. Ahmad Fauzi Bin Hasan President of the Malaysian National Committee of the IEC, CEO Malaysian Energy Commission
- Thailand:
 - □ Ms. Rachada Isarasenarak Director of Thailand Standards Bureau
- □ Singapore:
 - Ms. Leong-Chung Suet Mui Principal Technical Executive, Electrical and Electronic Standards
- Philippines:
 - Mr. Roberto Cristobal President Philippine National Committee of the IEC, Chairman Philippines Product Certification Advisory Committee (Discussion Leader)



- There is awareness that LED lamps or Light Source is energyefficient and that has tremendous potential for energy savings.
- There are very few, if at all, IEC standards that are available for national adoption.
- There is no Product Certification or Mandatory Testing being conducted for LED Lamps at this time.
- LED Lamps are still sold at the price outside of the reach of normal household consumers. Therefore consumer protection through Regulation is not yet urgently required.
- LED Lighting Products at this time are openly traded for Commercial and Industrial Application. Specifications are written in Tenders or Purchase Agreements. Verifications are performed or made by the technical people of the purchasing party.

- Consumers who intend to buy LED rely on two methods to determine the level of quality.
 - Manufacturer/Brand known brands means higher quality products and unknown brands means lower quality products
 - Price the higher the price (comparatively) the higher the quality of the product and the lower the price the lower the quality of the product being offered for sale.
- Available IEC PAS documents are interim guide specifications and recommended for use to those who inquires about the necessary IEC International Standards.
- The process of having a new Technical Regulation to be approved by Government is very long and difficult. It is prudent or advisable to consider new Technical Regulations for LED Lamps or Light Source when a substantial number of IEC International Standards are already made available or are already published for use.
- SDOC mechanism can be used for interim protection of normal household consumers from unsafe and/or low quality LED Lamps or Light Source until such time that a mandatory Technical Regulation could have been made available by the Government.
- An Exploratory Meeting can be considered among ASEAN country Regulators to look into the upcoming impact of LED Lamps or Light Source being made available to the normal household consumers or the market buying public.



Sharing Test Data on ALC Website

David Boughey



Background

□ Actions from Sydney lites.asia meeting:

□ Explore sharing of CFL test data via ALC website



Issues to Discuss

- Usefulness of test data
- Existing data sources
- Confidentiality
- Presentation of test results



Usefulness of Test Data

- □ Test results could be used for / by:
 - Government policy makers
 - Program implementers
 - General benchmarking of the global lamp market, over time
 - Consumer advocates
 - Manufacturers to compare with their competitors and plan new products
 - □ Other?



Existing data sources

- Much data exists that would be useful to share
 - □ Government testing
 - Consumer advocate testing
 - □ ALC registration process
 - □ Manufacturer in-house testing
 - □ Other?



Confidentiality

- Display product ID?
 - □ Where a result of government testing?
 - Where permission granted from manufacturer?
- □ Hide product ID?
- Display product ID for some
 - □ sharing compliance results between governments?
 - □ (paying?) users?
- Combination of the above?
 - Display product ID where possible



Confidentiality (cont'd)





Quality Control

How to ensure reliability of data?

- □ Cannot ensure 100%
- □ Require availability of test reports?
- Only data from accredited test labs?
- Classify database by level of reliability



Presentation of Test Results

- Tabulated test result data?
 - □ E.g. E3 testing (pto)
- A summary report for a number of products?
 E.g. Caliper (pto)
- Individual test report for each product?
- Combination of the above?
- □ Other?
- □ Format will influence how data can be used.







Home



About the Program

FAQs

Summary Reports

Detailed Reports

Benchmark Reports

Testing Laboratories

Standards Development

Technical Information Network

Gateway Demonstrations

Municipal Consortium

Design Competitions

CALIPER Summary Reports



Round 12 Summary Report JA

Report includes test results and analysis for products tested in Round 12, including recessed downlights, track lights, A-lamps, SSL replacements for linear fluorescent lamps, and cove lights. (35 pages, June 2011)

Round 11 Summary Report JA ٠

Report includes test results and analysis for products tested in Round 11, including roadway arm-mount and post-top luminaires, linear replacement lamps, high-bay luminaires, and small replacement lamps. (40 pages, October 2010)

Round 10 Summary Report

Report includes test results and analysis for products tested in Round 10, including parking structure luminaires, outdoor wallpack luminaires, cove lighting luminaires, and replacement lamps. (36 pages, May 2010)

Round 9 Summary Report ٠

Report includes test results and analysis for products tested in Round 9, including recessed downlights, linear replacement lamps, smaller replacement lamps, and a desk lamp. (33 pages, October 2009)

Round 8 Summary Report JA ٠

Report includes test results and analysis for products tested in Round 8, including replacement lamps, downlights and track lights, undercabinet fixtures, and outdoor fixtures. (28 pages, July 2009)

DOE conducts at least two rounds of CALIPER testing each year. A Summary Report is published following completion of each round which provides analysis of the test results for all products included in that round.

Round 13 Summary Report JA

Report includes test results and analysis for products tested in Round 13, including LED and benchmark high-bay luminaires, LED wallpack luminaires, and LED and benchmark 2'x2' troffers. (33 pages, October 2011)

Special Summary Report: Retail Replacement Lamp Testing Ja

Report includes test results and analysis for SSL replacement lamp productsdirectly available through retail outletsincluding A19, candelabra, night light, MR16/PAR16, PAR20, and PAR30 replacement lamps. (13 pages, April 2011)

The detailed individual test reports can be found here.

Cost / Maintennance

- Who will pay for cost of data collection, processing and hosting/maintenance?
 - □ Government efficiency programs in region?
 - □ Manufacturers?
 - □ User pays access?





□ Where to from here?

