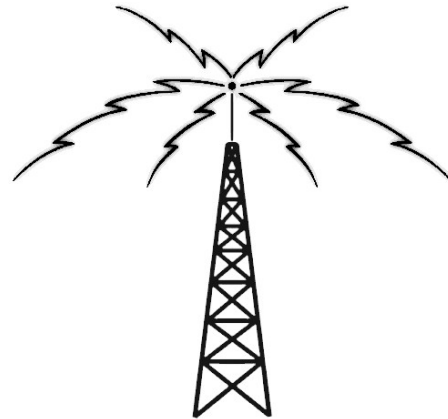


# Product Compliance

Andy Guest

EDA Forum May 2015

# What do we mean by compliant in lighting?



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# How do we know products are compliant?



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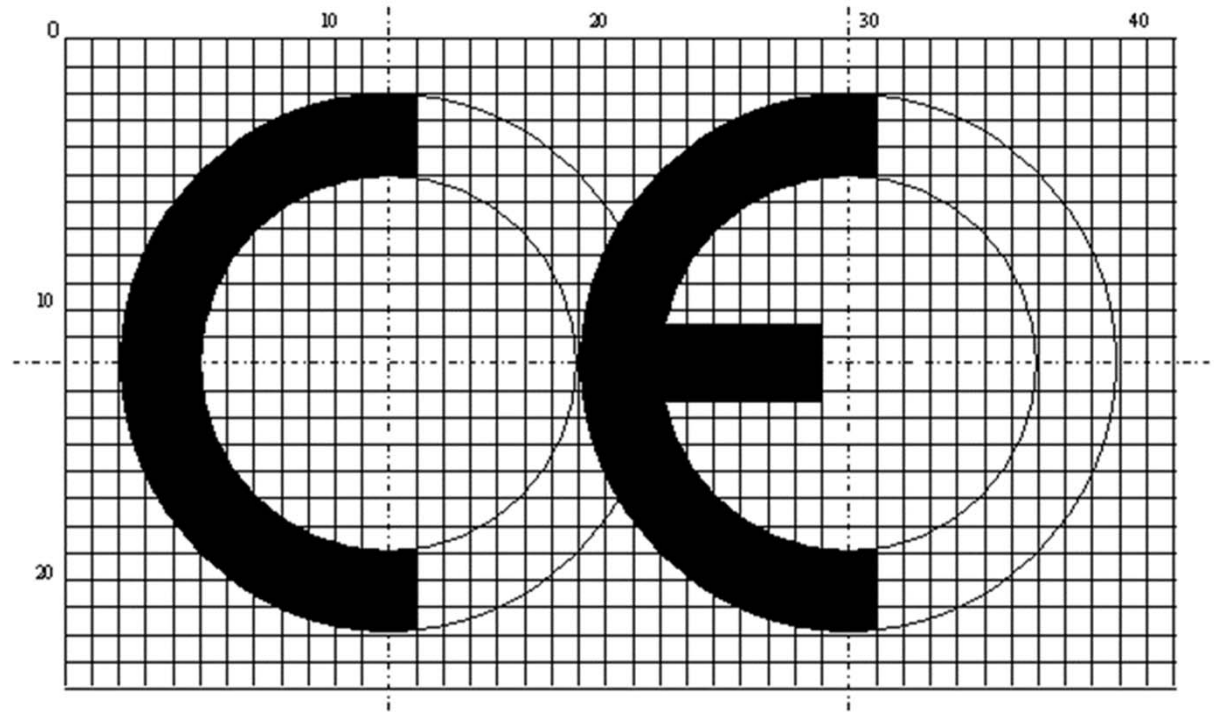
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# Its CE Marked That means its OK doesn't it?



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# What does the CE mark really mean?



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The CE mark is not a certification mark

- shows that the manufacturer has checked that products meet EU safety, health or environmental requirements
- is an indicator of a product's compliance with EU legislation
- Does NOT mean the products have been tested



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**HOLOPHANE**  
LEADER IN LIGHTING SOLUTIONS  
An Acuity Brands Company

**HOLOPHANE EUROPE LIMITED**

**DECLARATION OF CONFORMITY**

HOLOPHANE EUROPE LIMITED  
BOND AVENUE, BLETCHLEY  
MILTON KEYNES MK1 1JG, UNITED KINGDOM

declare under our sole responsibility that the product:

**VMX LUMINAIRE - VMX.L044.V1.X2L3**

to which this Declaration relates is in conformity with the following latest edition standard(s) or other normative document(s)

EN 60598-1:2008 + A11 May 2009: Luminaires. General requirements and tests. IEC 60598-1:2008  
IS 4533-102.1:1998, EN 60598-2-1:1989: Luminaires. Particular requirements. Specification for fixed general purpose luminaires IEC 60598-2-1:1979 + A1:1987

EN 55015: 2013: Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment. CISPR 15 ed8.1 Consol. with am1

EN 61000-3-11:2001, IEC 61000-3-11:2000: Electromagnetic compatibility (EMC). Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems. Equipment with rated voltage current ≤ 75 A and subject to conditional connection

EN 61000-3-2:2014: Electromagnetic compatibility (EMC). Limits. Limits for harmonic current emissions (equipment input current ≤ 16 A per phase) IEC 61000-3-2 ed4.0-2014

EN 61000-3-3:2013: Electromagnetic compatibility (EMC). Limits. Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection IEC 61000-3-3 Ed. 3.0 B: 2013

EN 61547:2009: Equipment for general lighting purposes. EMC immunity requirements IEC 61547 ed2.0

EN 62262:2002: Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)

EN 62031:2008+A2:2015: LED modules for general lighting. Safety specifications (Section 13.0): LED modules for general lighting. Safety specifications IEC 62031 ed1.2 Consol. with am1a2-2014

PD IEC/TR 62493-1:2013: Assessment of lighting equipment related to human exposure to electromagnetic fields. IEC 62493 ed2.0-2015

Product(s) listed above also meets all of the requirements of the following directives:

Low Voltage Directive: 2006/95/EC      EMC Directive: 2004/108/EC  
CE Marking: 93/68/EEC      WEEE Directive: 2012/19/EU      RoHS2 directive: 2011/65/EU

Certified By:  **CE**

Title: DIRECTOR OF PRODUCT & MARKET DEVELOPMENT

Date: 27<sup>th</sup> April 2015

Doc Ref: TSPE 1401, EMC14094 T13087, L13948, 14\_207, H1303, H-14020, L14440, L14626, EMC14081-MF, 15/31702023  
HEL 300-5      Doc Issue 4 (April 2015)

Holophane Europe Limited  
Bond Avenue, Milton Keynes MK1 1JG. Telephone 01908 649292. Fax 01908 367618. Registered in England No 8 43054  
VAT: GB 119 1294 77      ISO 9001 – DQS UL      417080QM08      [www.holophane.co.uk](http://www.holophane.co.uk)



A manufacturer issues a Declaration of Conformity based on evidence they have that the product complies with legislation – This is not necessarily independent data

Example of a good Declaration of Conformity



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Retail sector  
has generally  
always  
requested third  
party product  
compliance  
evidence



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Electrical  
wholesale industry  
historically based  
product selection  
on cost and  
volume with  
minimal internal  
compliance  
checking



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# How can the LIA help?



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The lighting industry asked for a simple manageable scheme to prove product safety and performance



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# LIA Lab Verified



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# Who are the LIA Laboratory?



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UKAS  
17025  
Test  
Laboratory



International  
Laboratory  
Accreditation  
Cooperation



5449

UKAS  
17065  
Certification  
Body



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Currently undergoing investment of nearly £3M a complete new 12,500sqft facility is under construction which will be operational January 2016



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2008/108/EC  
244/2009  
IEC 60598 series  
2009/125/EC  
2002/96/EC  
874/2012  
IEC/PAS 62717  
IEC 62386:2006  
2006/95/EC  
IEC PAS 62722  
245/2009  
2011/65 IE  
DIM2

2001/95/EC



IEC 62612:2013

IEC 62560:2011  
1194/2012  
C 62384:2006  
CENELEC  
61347 series  
IEC 62504:2011  
WEEE  
C 62471:2006  
1907/2006  
13032-1:2004  
R 61341:2010  
2722-2-1:2011  
IEC 62031:2008



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# Follow legislation and recognised standards

BS EN 60598-1:2008  
Incorporating CENELEC amendment A11




**BSI British Standards**

**Luminaires —**  
Part 1: General requirements and tests

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raising standards worldwide™



24.5.2009  Official Journal of the European Union L 76/3

COMMISSION REGULATION (EC) No 244/2009  
of 18 March 2009  
implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to  
ecodesign requirements for non-directional household lamps  
(Text with EEA relevance)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Directive 2005/32/EC of the European Parliament and of the Council of 6 July 2005 establishing a framework for the setting of ecodesign requirements for energy-using products and amending Council Directive 92/42/EEC and Directives 90/57/EEC and 2000/14/EC of the European Parliament and of the Council (1) and in particular Article 14(1) thereof,

After consulting the Ecodesign Consultation Forum,

Whereas:

(1) Under Directive 2005/32/EC ecodesign requirements shall be set by the Commission for energy using products representing significant volumes of sales and made, having significant environmental impact and presenting significant potential for improvement in terms of their environmental impact without incurring excessive costs;

(2) Article 14(2) first indent of Directive 2005/32/EC provides that in accordance with the procedure referred to in Article 15(2) and the criteria set out in Article 15(3), and after consulting the Ecodesign Consultation Forum, the Commission shall as appropriate introduce an implementing measure on domestic lighting products;

(3) The Commission has carried out a preparatory study which analysed the technical, environmental and economic aspects of lighting products typically used in households. The study has been developed together with stakeholders and interested parties from the Community and third countries, and the results have been made publicly available on the EUROPA website of the Commission;

(4) Mandatory ecodesign requirements apply to products placed on the Community market wherever they are installed or used, therefore such requirements cannot be made dependent on the application in which the product is used (such as for domestic lighting);

(5) Products subject to this Regulation are designed essentially for the full or partial illumination of a household room, by replacing or complementing natural light with artificial light, in order to enhance visibility within that space. Special purpose lamps designed essentially for other types of applications (such as traffic signals, tetra-mercury lighting, or household appliances) and clearly indicated as such on accompanying product information should not be subject to the ecodesign requirements set out in this Regulation;

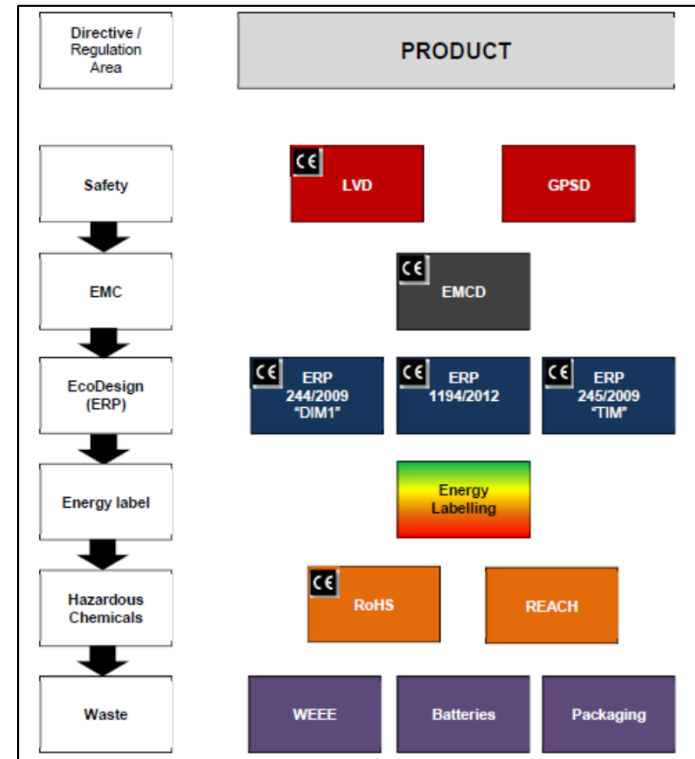
(6) New technologies emerging on the market such as light emitting diodes should be subject to this Regulation;

(7) The environmental aspects of the products covered that are identified as significant for the purpose of this Regulation are energy in the use phase as well as mercury content and mercury emissions;

(8) The annual electricity consumption related to products subject to the Regulation in the Community has been estimated to be 31,2 TWh in 2007, corresponding to 45 Mt CO<sub>2</sub> emissions. Without taking specific measures, the consumption is predicted to increase to 335 TWh in 2020. The preparatory studies showed that electricity consumption of products subject to this Regulation can be significantly reduced;

(9) Mercury emitted in the different life cycle phases of the lamps, including from unalloyed electricity generation and from the 80 % of compact fluorescent lamps containing mercury which are presumed not to be recycled at the end of life, has been estimated to be 2,9 tonnes in 2007 from the installed stock of lamps. Without taking specific measures, the mercury emissions of the installed lamp stock is predicted to increase to 3,1 tonnes in 2020 while it has been demonstrated that it can be significantly reduced;

(1) OJ L 191, 22.7.2005, p. 28.



Does not necessarily mean products will perform as manufacturer declares



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# What Is The LIA Laboratories Verified Scheme



004-00XX

Safety Performance Life  
Independence Visibility



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# How Does The LIA Laboratories Verified Scheme Work

Fast Effective Route to Demonstrate  
Compliance & Reliability

Independent Third Party Test Data

Pre Approval at 100 Hours

Full approval at 2000 Hours

Can be used as lead in to other  
product verification such as ERP



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# What Products Are Covered By The LIA Laboratories Verified Scheme



**LED Lamps**



**LED Modules**



**LED Luminaires**



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# Product Sampling

## Lamps & Modules - Total Samples Required - 15



Lamp Safety - 5

Lamp Performance - 10

## Luminaires - Total Samples Required - 3



Luminaire Safety - 1

Luminaire Performance - 2



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# Safety

## Assessment to clauses of harmonised standards

**LED Lamps (Self ballasted >50V)** – BS EN 62560:2012

Reference standards: BS EN 60061 series with 2012 Amd's

**LED Lamps (No ballast <50V)** – BS EN 62031:2008 + A1:2013

Reference standards: BS EN 60061 series with 2012 Amd's

**LED Tubes** – IEC decision sheet DHS702

Reference standards: BS EN 60061 series with 2012 Amd's

BS EN 61347 series

BS EN 60598 Series

BS EN 62560:2012

BS EN 62031:2008 + A1:2013

BS EN 61195:61195:1999+A1:2013

**LED Luminaires** – BS EN 60598 series

Reference standards: BS EN 62031:2008 + A1:2013

BS EN 61347 Series



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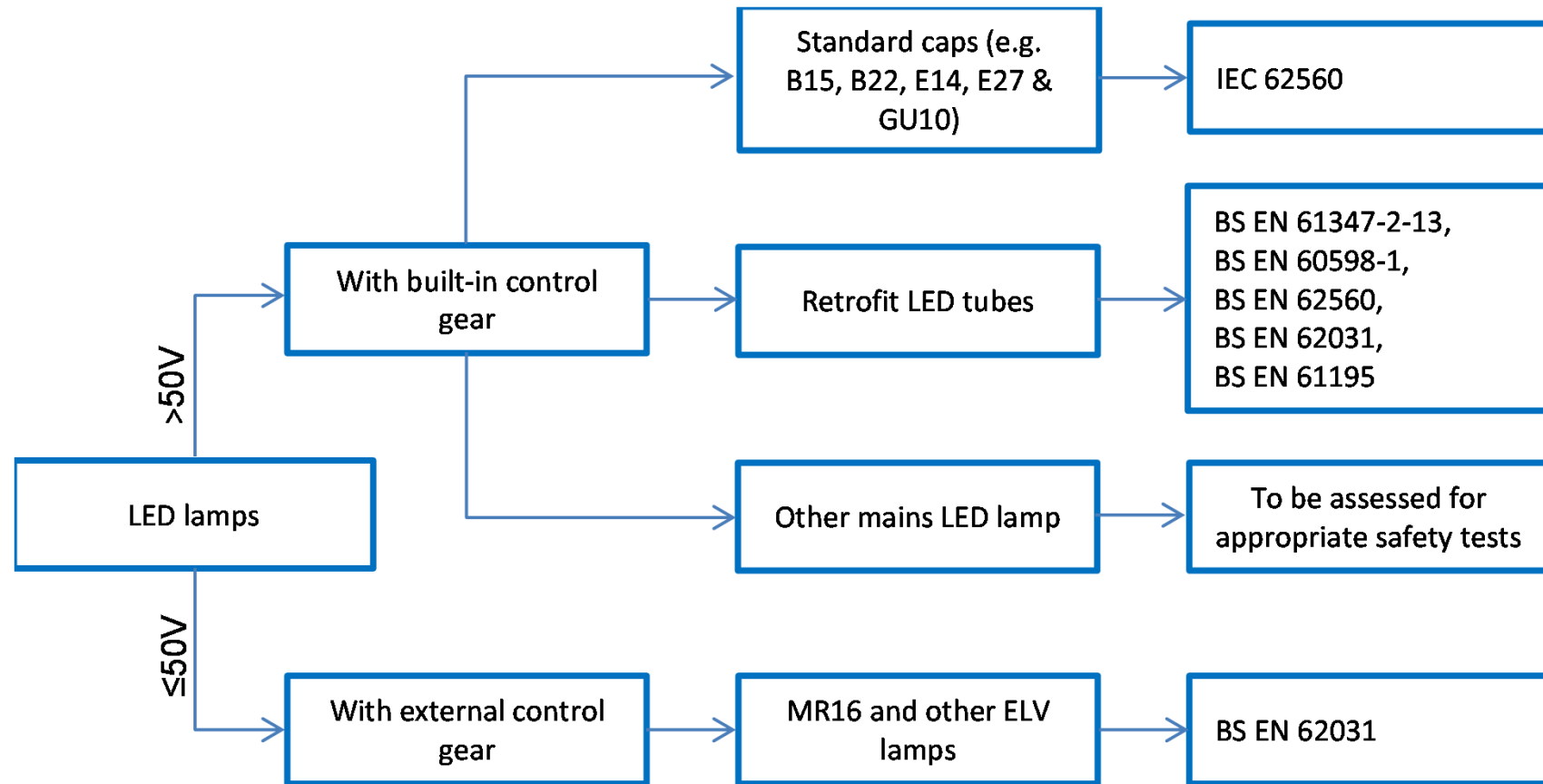


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# Safety - Lamps



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# Performance

## Lamp And Luminaires – Key Points

**2000 Hours** - 3 hour cycle (i.e. 8 X 15min rest cycles in a 24 hour period)

**Measurement on samples** - 0 hour, 100 hour 2000 hour

**Measurement Parameters** - Initial beam angle (if applicable)  
Initial integrated lumens at  $25\pm 1^{\circ}\text{C}$   
Correlated Colour temperature CCT  
Colour rendering – Ra  
Colour rendering index – x, y  
Colour Uniformity – u, v  
Power Factor -  $\lambda$   
Photopic and Scotopic ratio



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# Performance Compliance

Performance Parameter	Limits
Initial Lumen	≥ 0.90 of manufacturer declared value
Lumen maintenance at 100hrs	≥ 0.95 of Initial Lumen
Lumen maintenance at 2000hrs	0.90 ≤ L ≤ 0.10 of Initial Lumen (Cat A) 0.80 ≤ L < 0.90 of Initial Lumen (Cat B)
Initial Beam Angle	≥ 0.90 of manufacturer declared value
Lamp Life at 2000hrs	≥ 0.90 of sample size
Colour Rendering, Ra	≥ 80 or 65 for outdoor use
Lamp Power factor	P ≤ 2W – No requirement 2W ≤ P ≤ 5W; λ > 0.4 5W ≤ P ≤ 25W; λ > 0.5 P > 25W; λ > 0.9
Lumens per wattage	≥ 60Lm/W



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# Life Test

## Lamp Survival

9 out of 10 lamps to remain fully functional at the end of 2000 hours

## Luminaire Survival

Both luminaires to remain fully functional at the end of 2000 hours



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# Life Test

## Why 2000 Hours?

### Commercially

2000 Hrs = 3 Months = Time efficient

Changing technology means products have short selling life – typically 9-12 months before change

### Technically

Initial readings can be misleading to actual product performance

Premature failures need to be identified



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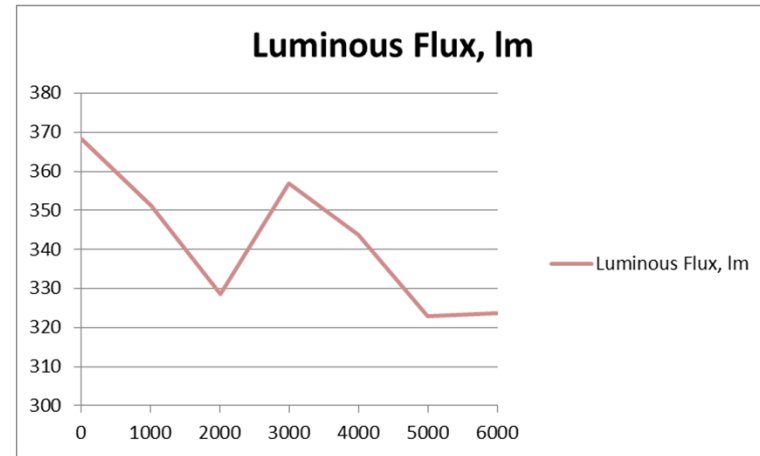
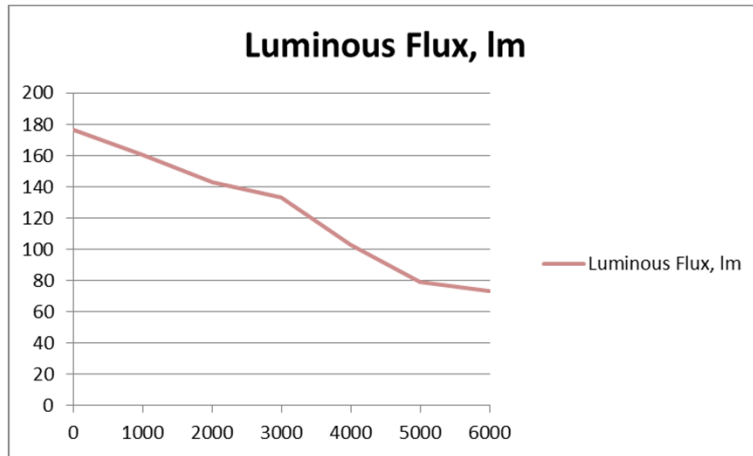
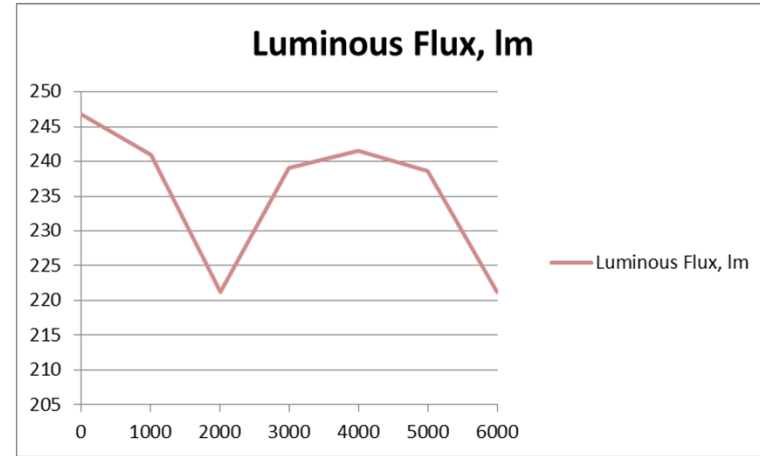
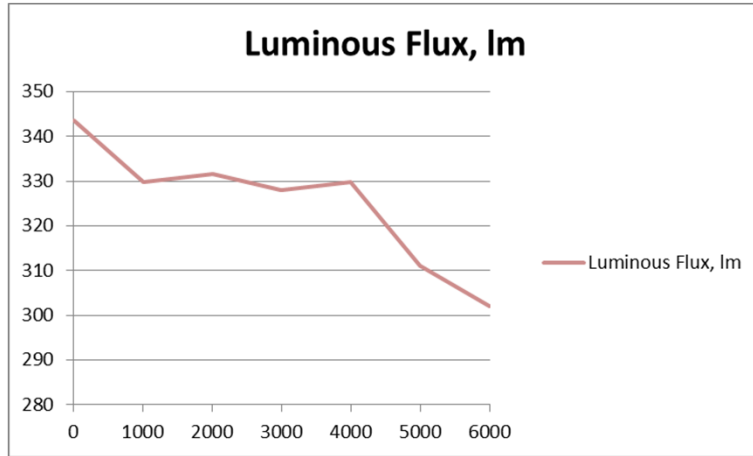


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# Life Test



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# Certification

**1. INTRODUCTION**  
This Schedule scheme for LIA Laboratories

**2. CERTIFICATION SCOPE**  
The products to be certified are those specified in the client documents.

**3. SCOPE**  
The products assessed and certified are:  
Table 1. Product Reference  
Model No. R2530DL-01

**4. DOCUMENTATION**  
As part of the Technical File the manufacturer must maintain certification related to all of the following:  
Table 2. Critical Document Reference  
PV103\_D001  
PV103\_D002  
PV103\_D003  
PV103\_D004  
PV103\_D005  
PV103 Interim Test Report  
PV103 Final Test Report

**A.1. ETERNITY IP20**  
**A.1.1. PRODUCT SPECIFICATIONS**  
Table A.1 Product Specifications  
Product Name: ROBUS  
Model No.: R2530DL-01  
Product Description: LED Downlight  
Nominal Dimensions: 253mm x 253mm x 100mm  
Product Supply Requirements: As per client documents  
Lamp Type and Power: As per client documents

**A.1.2. SAFETY EVALUATION**  
Safety assessment was conducted in accordance with document TSD-004, the and IEC 60598-2-2:2015.  
Table A.2 Safety Test Results  
Clause No.: 1.3, 1.4, 1.8, 1.10.2, 1.11, 1.12.4

**A.1.3. CENTRE BEAM INTENSITY**  
Table A.3 Beam Angle  
Centre Beam Intensity: 729.1  
Figure 3. Polar Diagram

**A.1.4. COLORIMETRY**  
Table A.4 Colorimetry  
x coordinate: 0.198  
y coordinate: 0.282  
u coordinate: 0.020  
v coordinate: 0.045  
Dominant Wavelength: 450nm  
Purity (%): 99.9  
Correlated Color Temperature (K): 3984.3  
Ra (%): 98.9  
R1 (%): 99.9  
R2 (%): 99.9  
R3 (%): 99.9  
R4 (%): 99.9  
R5 (%): 99.9  
R6 (%): 99.9  
R7 (%): 99.9  
R8 (%): 99.9  
R9 (%): 99.9  
R10 (%): 99.9  
R11 (%): 99.9  
R12 (%): 99.9  
R13 (%): 99.9  
R14 (%): 99.9  
Lumen Output (lm): 1902.3

**A.1.5. LIFE TEST**  
Table A.5 Colorimetry depreciation of Eternity IP20 25W 230mm 4000K LED Downlight  
Measured Value: 0 hours, 100 hours, 2000 hours  
Correlated Colour Temperature (K): 3984.3, 3941.5, 3959  
Ra (%): 82.1, 82.2, 82.1  
Luminous Flux (lm): 1926.3, 1902.3, 1916.0

**Figure 4. CIE 1931 diagram**  
**Figure 5. Spectral Flux**  
**Figure 6. Luminous flux depreciation curve for Eternity IP20 25W 230mm 4000K LED Downlight**



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# Data Provided / Website

Real life measured data displayed on a public access website

The screenshot displays three product listings on a website. Each listing includes a product image, technical specifications, and three graphs: Polar diagram, CIE diagram, and Spectral flux. The first listing is for a 'TRILED Fire Rated LED Downlight 3x3W', the second for 'Vulcan 80W LED Corrosion Proof Fitting', and the third for 'Eternity IP20 25W 230mm 4000K LED Downlight'. Each listing also provides the model number, manufacturer, certificate number, and date of registration, along with a link to visit the manufacturer's website.

Product Name	Model Number	Manufacturer	Certificate Number	Date Of Registration
TRILED Fire Rated LED Downlight 3x3W	RF9LED	Lighting & Electrical Distribution Group	004-0003	03/06/2014
Vulcan 80W LED Corrosion Proof Fitting	R240LEDCP-01	Lighting & Electrical Distribution Group	004-0002	28/05/2014
Eternity IP20 25W 230mm 4000K LED Downlight	R25230DL-01	Lighting & Electrical Distribution Group	004-0001	04/04/2014



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# Surveillance

## Ongoing Product Assessment

Lamps	5 Samples annually to confirm product consistency with initial test samples
Luminaires	1 Sample annually to confirm product consistency with initial test samples

This is NOT a market surveillance program – it is to provide evidence of ongoing compliance of certified products



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# Future

## Future Categories of Products to be Added to the Scheme:

**Emergency Luminaires**

**Electronic Control Gear**



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# Laboratory Testing

LIA Laboratory can test to many EN and IEC safety and performance standards as well as photometric measurements and UV / Blue light hazard assessment



UKAS  
17025  
Test  
Laboratory



International  
Laboratory  
Accreditation  
Cooperation



5449  
UKAS  
17065  
Certification  
Body



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