LIA LABORATORIES PRODUCT CONFORMITY SCHEME

TSD-001 Version 1.3 March 2014

LUMINAIRES

Contents

1 INTRODUCTION

This certification scheme has been developed in accordance with the LIA Laboratories' Product Certification System, which is detailed in the Product Certification System Document. The scheme is operated in accordance with the LIA Laboratories' Quality and Operations Manuals. The purpose of this scheme is to assess the compliance of luminaires and associated accessories with the essential safety requirements of BS EN 60598-1:2008, and the relevant supporting parts of BS EN 60598-2 (state of the art), for home or commercial use.

Applicants who have been assessed and meet the requirements of the scheme are granted certification and may use the certification mark. Voluntary certification to this scheme gives third party confirmation of the manufacturer's declaration in accordance with the European Low Voltage Directive 2006/95/EC.

Note that the client has an obligation to inform LIA Laboratories of any changes to the certified products, which might affect certification.

2 DEFINITIONS & ABBREVIATIONS

The following definitions and abbreviations are used throughout the document. Other definitions are as given in the relevant standards.

Scope	Detailed specification of certified products and associated components.
FPC	Factory Production Control
QMS	Quality Management System
NCR	Non Conformance Report

Luminaire Apparatus which distributes filters or transforms the light transmitted from one or more lamps.

The definitions given in BS EN 60598-1 section 1 also apply to this scheme.

3 SCOPE

This scheme has been developed by the LIA Laboratories Limited as a basis of conformity assessment of Luminaires. It should be used in accordance with BS EN 60598-1, the parts of BS EN 60598-2 appropriate to the exact product(s) being assessed (see Annex 1). This scheme covers luminaires, incorporating electric light sources for operation from supply voltages up to 1 000 V. The requirements and related tests of this scheme include: classification, marking, mechanical construction, electrical construction, type testing and factory production control.

4 SCHEME REQUIREMENTS

4.1 Technical Conformity

4.1.1 General Construction Requirements

The luminaires shall be designed and constructed in accordance with BS EN 60598-1 Section 4. Compliance with Section 4 shall be assessed by inspection, measuring and/or testing as described in the standard.

4.1.2 External and Internal Wiring

The luminaires shall be designed and constructed in accordance with BS EN 60598-1 Section 5. Luminaires shall be provided with a means of connection to the supply. Compliance with Section 5 shall be assessed by inspection, measuring and/or testing as described.

4.1.3 Provision for Earthing

Metal parts of class I luminaires which are accessible when the luminaire has been mounted, or is opened for replacement of a lamp or replaceable starter or for cleaning purposes, and which may become live in the event of an insulation fault, shall be permanently and reliably connected to an earthing terminal or earthing contact.

Metal parts of luminaires which may become live in the event of an insulation fault and which are not accessible when the luminaire has been mounted, but are liable to come into contact with the supporting surface, shall be permanently and reliably connected to an earthing terminal.

The luminaires shall be designed and constructed in accordance with BS EN 60598-1 Section 7. Compliance with Section 7 shall be assessed by inspection, measuring and/or testing as described.

4.1.4 Protection against Electric Shock

Luminaires shall be designed and constructed in accordance with BS EN 60598-1 Section 8, so that their live parts are not accessible when the luminaire has been installed and wired as in normal use, and when it is opened as necessary for replacing lamps or (replaceable) starters.

Compliance with Section 8 shall be assessed by inspection, measuring and/or testing as described.

4.1.5 Resistance to Dust, solid objects and Moisture

Luminaires shall be designed and constructed in accordance with Section 9 of BS EN 60598-1 so as to provide the degree of protection against ingress of dust, solid objects and moisture. Compliance with Section 9 shall be assessed by testing as described.

4.1.6 Insulation Resistance and Electrical Strength

Luminaires shall be designed and constructed in accordance with Section 10 of BS EN 60598-1 so as to provide adequate insulation resistance and electric strength. Compliance with Section 10 shall be assessed by testing as described.

4.1.7 Creepage Distances and Clearances

Luminaires shall be designed and constructed in accordance with Section 11 of BS EN 60598-1 so as to provide adequate creepage distances and clearances between components (as listed in table M.1 in Annex M). Compliance with Section 10 shall be assessed by measuring as described.

4.1.8 Endurance and Thermal

Luminaires shall be designed and constructed in accordance with Section 12 of BS EN 60598-1 so that under conditions representing cyclic heating and cooling in service, the luminaire shall not become unsafe or fail prematurely. Under conditions representing normal service, no part of the luminaire (including the lamp), the supply wiring within the luminaire, or the mounting surface shall attain a temperature which would impair safety.

In addition, parts intended to be touched, handled, adjusted or gripped by hand while the luminaire is at operating temperature shall not be too hot for the purpose. Luminaires shall not cause excessive heating of illuminated objects. Compliance with Section 11 shall be assessed by inspection and testing as described.

4.1.9 Resistance to Heat, Fire and Tracking

Luminaires shall be designed and constructed in accordance with Section 13 of BS EN 60598-1 so as to provide adequate resistance of insulation to heat, flame, ignition and tracking. Compliance with Section 13 shall be assessed by testing as described.

4.1.10 Screw terminals

The screw terminals of luminaires shall be designed and constructed in accordance with Section 14 of BS EN 60598-1 so as to be safe. Compliance with Section 14 shall be assessed by inspection, measurement and testing as described.

4.1.11 Screwless Terminals and Electrical connections

The screwless terminals and electrical connections of luminaires shall be designed and constructed in accordance with Section 15 of BS EN 60598-1 so as to be safe. Compliance with Section 15 shall be assessed by inspection and testing as described.

4.2 Factory Production control requirements

4.2.1 General Requirements

The producer shall establish, document and maintain a FPC system to ensure that the products placed on the market conform to the required characteristics in BS EN 60598 on an on-going basis.

The control system shall consist of procedures, regular inspections and testing and/or assessment. The results should then be used to control raw materials, components, equipment, the manufacture process and the product.

The results of inspections, tests or audits on material or staff shall be recorded, as shall any action taken as a result of these inspections, tests or audits.

Note that a system in accordance with ISO 9001, that includes the specific requirements of BS EN 60598, would meet the requirements for FPC.

4.2.2 FPC Tests

The purpose of the FPC tests and examinations shall be to establish that the product is safe before it leaves the factory. Tests are normally undertaken after full assembly, whereas examinations may be conducted at any appropriate stage of the manufacture process. The tests and examinations required are given below in table 4.2.2.

Table 4.2.2.

Description of Test	Methods	Frequency	Pass / Fail criteria		
			Class I	Class II	Class III
Visual examination and measurement of components.	BS EN 60598 See 4.1.1 above	To be determined by the manufacturer within the FPC system.	To be determined by the manufacturer within the FPC system.		
Visual examination to ensure that construction in accordance with the design specification.	BS EN 60598 See 4.1.1 above	To be determined by the manufacturer within the FPC system.	To be determined by the manufacturer within the FPC system.		
Visual examination and where appropriate manual test to ensure that all electrical connections have been made correctly and reliably.	BS EN 60598 See 4.1.2 above	To be determined by the manufacturer within the FPC system.	To be determined by the manufacturer within the FPC system.		
Test to ensure that any accessible metal parts of class I luminaires are reliably connected to an earthing terminal.	BS EN 60598 See 4.1.3	To be determined by the manufacturer within the FPC system.	Clause 7.2.3 of BS EN 60598-1		
Visual examination and manual test to ensure the proper use and functioning of any cord anchorage.	BS EN 60598 See 4.1.2 and 4.1.8	To be determined by the manufacturer within the FPC system.	Clause 5.2.10 of BS EN 60598-1.		
Test to ensure circuit continuity.	To be determined by the manufacturer within the FPC system	Each and every luminaire unit manufactured.	Product must light up in order to pass.		
Test to ensure adequate insulation levels.	BS EN 60598 See 4.1.6	Each and every luminaire unit manufactured.	1.5kV between LN & E for a minimum of 1 second.	1.5kV between LN the accessible surface for a minimum of 1 second.	500V between supply conductors and any metal enclosure for 1 second.
Visual examination to ensure the presence and correct application of the required marks and user information.	BS EN 60598	To be determined by the manufacturer within the FPC system.	Clause 3 of BS EN 60598-1.		

4.3 Quality Management System Requirements

4.3.1 Purchasing

Purchase orders shall detail that components and cables must comply with the appropriate standard. Evidence of compliance shall be requested from the component supplier. Evidence should take the form of certification and/or testing.

4.3.2 Goods inward inspection

The company shall check that incoming materials conform to the purchase order. They shall also check that the component has the requested evidence of compliance. Goods shall be segregated from stock until these checks have been completed and compliance verified.

4.3.3 Production

Assembly instructions must be available to production operatives.

4.3.4 Test inspection

A test program shall be conducted in accordance with table 4.2.2. All equipment used to conduct tests shall be appropriate to its intended use, properly maintained and calibrated.

Inspection records shall be created and shall include:

- Test Equipment used
- Date of inspection/test
- Batch number
- Name of the person carrying out the test/inspection
- Model reference
- Quantity
- Status i.e. Pass/Fail

Procedures shall allow for proper identification and segregation for products shown to be non-conforming.

Calibration of test equipment shall be carried out when the equipment is suspected of malfunction, or subject to physical or environmental abuse. In any case calibration must be conducted at least once per year.

Records shall be kept of calibration and shall include:

- Reference number and identification
- Date of calibration
- Date of next calibration due
- Traceability of reference standards
- Name or reference of person carrying out the calibration.
- Use of test equipment outside calibration validity is not permitted.

4.3.5 Sales/stock

Scheme members are required to maintain a record indicating the destination of all luminaires i.e. purchasers name or an indication that they are for stock. (Dispatch records will indicate to whom and when the goods were sent).

Such records must provide a cross reference to the date of inspection, production or batch testing and model reference.

4.3.6 Records

The following records shall be maintained.

- Purchase requisitions
- Goods inwards inspection details
- Inspection/test records
- Calibration records
- Operator training / colour blindness test records
- Non-conforming segregation records
- Audit test records
- Type test records
- Records of any component change
- Copies of test certificates and /or certificates of conformity from suppliers
- Sales / stock records

4.3.7 Management Responsibility

The management of the company shall carry out a regular review of the system, which shall include production records and any complaints that have been received. Notes shall be kept of any topics discussed and decisions made.

4.3.8 Company representative

A nominated member of the management team shall be responsible for the QMS.

4.3.9 Internal audits

Routine internal audits should be carried out to ensure compliance with the requirements of this scheme are met.

4.3.10 Documentation

The manufacturer shall ensure that full production, inspection and test records are kept in a format that is acceptable to LIA Laboratories for a minimum of 10 years.

4.3.11 Work Instructions

Work instructions and target values shall be placed at the critical production points throughout the manufacturing process.

4.3.12 Procedures for non-conforming product

Where factory production control/target values are out of specification there must be a procedure for identifying and correcting these deficiencies. The factory production control system should be adequate enough to be able to detect non-conforming product quickly enough so that effected product can be quarantined.

4.3.13 Traceability

As part of the QMS, scheme Members will need to implement procedures, which enable appropriate traceability of production runs through to dispatch.

4.3.14 Training

The company shall maintain records to show that staff have been satisfactorily trained to undertake the manufacturing and inspection tasks that they have been assigned. Records must be kept of this training and the personnel's job description shall be clearly defined.

4.3.15 Complaints

The company shall maintain a register of all complaints received on the quality of their luminaires, which should show the steps they have taken to deal with the problem and their analysis of the causes. These records shall be kept for a minimum of 10 years.

4.3.16 Document control

There must be procedures for effectively controlling the quality of documentation issued to the relevant personnel, so that they have up-to-date procedures.

4.3.17 Machinery maintenance and calibration

All machinery and measuring / testing equipment that could affect the quality of the product must be properly maintained and calibrated so that a consistent product can be produced and tested. There shall be a maintenance and calibration schedule. A record of the maintenance and calibration carried out shall be kept.

If the calibration is carried out 'in-house' then the references shall be calibrated at an acceptable period against national or international standards by a third party.

4.4 Audit Assessment

The scheme member shall allow access to premises and participate in audits of the FPC-QMS conducted by LIA Laboratories. Audits may be carried out unannounced.

Surveillance audits will usually be carried out once per year following an initial inspection. It may however be necessary to increase the number of visits following an unsatisfactory outcome of a scheduled assessment.

The scheme member will be provided with an audit report which details any corrective actions required by the member. Such corrective actions must be completed and confirmed in writing to LIA Laboratories within the following timescales on receipt of the report.

Initial Assessment Audit		**Surveillance Audit**	
Major Non-conformity	Minor Non-conformity	Major Non-conformity	Minor Non-conformity
3 months	3 months	1 month	2 months

Verification of the corrective action will normally be carried out during the next surveillance visit. It may, however, be necessary to carry out an unscheduled visit under certain circumstances.

4.5 On Going Product Performance Appraisal

On-going performance appraisal of the product is undertaken. Where LIA Laboratories receives a complaint regarding one or more certified products or a major non-conformance is raised concerning a certified product during a surveillance audit, then the manufacturer shall supply further product samples for reassessment at additional cost to be borne by the manufacturer.

4.6 Certification Period

4.6.1. Certification duration and reassessment intervals

Following a successful conformity assessment a certificate will be issued. The certification period will run for three years from the date of issue, assuming that on-going assessment confirms that the products remain in conformity with the scheme. Prior to the end of the three year period, a review shall be undertaken to determine whether it is appropriate to reissue the certificate and commence a new certification cycle of 3 years. The purpose of the review is to assess whether:

- Any of the conformity standards, supporting standards or scheme requirements have been updated since the initial assessment.
- Regulatory requirements, appropriate to the product have changed
- The product range falling under the scope of certification needs to be increased / decreased.
- The products themselves have undergone any significant changes in design, or composition.
- There have been significant changes to production location or facilities.
- There have been any significant changes to factory production control methods or manufacture processes.

The impact of any such changes on the validity of the initial type testing, factory production control and hence certification decision shall be assessed.

Where no significant changes are identified, and on-going conformity is assured, then the certificate will be re-issued for a further 3 years, subject to the ongoing scheme requirements.

Where significant changes are identified, which affect the validity and scope of the certification, and then actions necessary to address these changes will be communicated to the client. The certificate may be suspended, or withdrawn until the issues have been addressed satisfactorily. When actions have been completed satisfactorily to bring the certification up to date, then the certification period will re-commence for a further three years.

4.6.2. Changes during certification

In addition to the re-certification review, it is the responsibility of the client to inform LIA Laboratories of any changes that occur affecting certification as identified in 4.6.1 within the certification period.

The impact of any such changes on the validity of the initial type testing, factory production control and hence certification decision shall be assessed.

Where no significant changes are identified, and on-going conformity is assured, then the certificate will remain valid, subject to the ongoing scheme requirements.

Where significant changes are identified, which affect the validity and scope of the certification, and then actions necessary to address these changes will be communicated to the client. The certificate may be suspended, or withdrawn until the issues have been addressed satisfactorily.

4.7 Documentation

4.7.1 QMS - FPC system

LIA Laboratories will assess organization`s QMS-FPC system to verify that a common understanding of quality requirements and required product characteristics are achieved. The QMS-FPC system shall be put together in a systematic manner in a written way and should address the requirements of 4.2 and 4.3 of this document.

4.7.2 Manufacturing Documentation

Manufacturing records shall be kept for a minimum of 10 years.

The Organization shall demonstrate how the process listed in clause 4.2 are followed and controlled. The documents and records associated with the FPC must be made available to the auditor who will review at each audit.

The finished product must be marked, identified or labelled so that the pack can be identified through the FPC and traced back to the constituent components.

4.7.3 Product Specification

The product specification may form part of the FPC system or may be a separate document in its own right.

The product specification documentation should contain the following minimum information:

LIA Laboratories will conduct a product review of the products to be certified to determine the conformity against product specification and standard requirements.

5 IDENTIFICATION AND USE OF THE “LIA LABORATORIES” AND CERTIFICATION LOGOS

All “LIA Laboratories” and certification logos shall be used according to relevant product certification system requirements as specified in the LIA laboratories Logo Usage Policy.

In addition to the identification and marking requirements of BS EN 60598, each luminaire shall be marked with the certification mark and company certification reference number.

The marking proposed by the company for each luminaire has to be approved by LIA Laboratories.

6 ACCESS TO FACILITIES AND INFORMATION

Where a complaint is received by the LIA Laboratories regarding a product and/or data covered by the Scheme, the manufacturer will make available to the LIA Laboratories any information, data, samples and access to facilities, personnel and subcontractors in order to investigate such complaints.

On occasion, where a Scheme is covered within the LIA Laboratories’ ISO 17065 schedule of accreditation with UKAS, there may be a need to allow third party access to a manufactures’ facilities during the assessment process. It should be noted that the manufacturer will be notified of any such requirement, all information obtained during such visits will remain confidential at all times.

7 IMPARTIALITY

The latest copy of the LIA Laboratories' impartiality policy along with the Terms & Conditions of this Scheme can be found on www.lialabcert.org.uk alternatively a copy can be requested by e-mail at lab@thelia.org.uk.

8 APPLICATION

An application form for this Scheme can be downloaded from www.lialabcert.org.uk alternatively a copy can be requested by e-mail at lab@thelia.org.uk.

9 ADDITIONAL INFORMATION

Details of the evaluation procedures, rules and procedures for granting, for maintaining, for extending or reducing the scope of, for suspending and for withdrawing certification can be requested by email at lab@thelia.org.uk.

ANNEX 1 – PARTS OF BS EN 60598-2

Part 2-1	Fixed general purpose luminaires
Part 2-2	Recessed luminaires
Part 2-3	Luminaires for road and street lighting
Part 2-4	Portable general purpose luminaires
Part 2-5	Floodlights
Part 2-6	Luminaires with built-in transformers for tungsten filament lamps
Part 2-7	Portable luminaires for garden use
Part 2-8	Hand lamps
Part 2-9	Photo and film luminaires (non-professional)
Part 2-10	Portable luminaires for children
Part 2-11	Aquarium luminaires
Part 2-12	Mains socket-outlet mounted nightlights
Part 2-13	Ground recessed luminaires
Part 2-14	Not used at present
Part 2-15	Not used at present
Part 2-16	Not used at present
Part 2-17	Luminaires for stage lighting, television and film studios (outdoor and indoor)
Part 2-18	Luminaires for swimming-pools and similar applications
Part 2-19	Air-handling luminaires (safety requirements)
Part 2-20	Lighting chains
Part 2-21	Not used at present
Part 2-22	Luminaires for emergency lighting
Part 2-23	Extra low voltage lighting systems for filament lamps
Part 2-24	Luminaires with limited surface temperatures
Part 2-25	Luminaires for use in clinical areas of hospitals and health care buildings

ANNEX 2 – NORMATIVE STANDARDS

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS EN 60598-1	Luminaires. General requirements and tests
BS EN 60598-2	Luminaires. Particular requirements (See Annex 1 above)
BS EN ISO 9001	Quality management systems. Requirements
BS EN ISO/IEC 17065	Conformity assessment. Requirements for bodies certifying products, processes and services
ISO/IEC 17067	Conformity assessment -- Fundamentals of product certification and guidelines for product certification schemes
2006/95/EC	Low Voltage Directive (LVD)