



TM66 ASSURED PRODUCT VERIFICATION SCHEME

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Table of Contents

1	CERTIFICATIONS AND PROCEDURES SUPPORTING THIS SCHEME.	3
1.1	Introduction	3
2	DEFINITIONS & ABBREVIATIONS	4
3	SCOPE	4
4	SCHEME REQUIREMENTS	5
4.1	Technical Conformity	5
4.1.1	Method and marking criteria	5
4.1.2	Family variants	5
4.2	Certification Period	6
4.2.1	Certification duration	6
4.2.2	Changes during certification	6
4.3	Documentation for certification evaluation	7
4.3.1	Circular Economy	7
4.3.2	Product Design	7
4.3.3	Manufacturing process	8
4.3.4	Materials	9
4.3.5	Impact on ecosystem	9
5	IDENTIFICATION AND USE OF THE CERTIFICATION LOGOS	10
6	ACCESS TO FACILITIES AND INFORMATION	10
7	IMPARTIALITY	11
8	APPLICATION	11
9	SCHEME FEES	11
10	APPEALS	11
11	ADDITIONAL INFORMATION	11
	ANNEX 1 – REFERENCE DOCUMENTS	12

1 CERTIFICATIONS AND PROCEDURES SUPPORTING THIS SCHEME.

This certification scheme has been developed in accordance with the LIA's Product Certification System, which is detailed in their Product Certification System Document. The scheme is operated in accordance with the LIA Laboratory's Quality and Operations Manuals. This certification scheme is classified as type 1a certification scheme (ISO/IEC 17067). The certification service is accessible to all applicants who fall under the certification scope (see section 3).

The purpose of this scheme is to certify that any one CEAM score is justified by the product's manufacturing, materials, design and ecosystem and each decision is based upon reliable evidence and is in line with TM66 CEAM requirements, it therefore enable more accurate comparisons between those scores.

It covers **-Luminaires** and associated accessories with the essential requirements of CIBSE TM66:2021 (state of art) and document CIBSE document Circular Economy Assessment Method Beta (state of art).

All product's (or product family's) assessments that have been reviewed under this scheme and meet all requirements of the scheme are granted certification.

Note that anyone issuing a certification to the LIA for review and assurance has an obligation to inform The LIA Ltd. of any changes to the certified products, product design, materials, BOM, supply chain, ecosystem, etc. which might affect certification.

1.1 Introduction

TM66 Assured addresses the huge industry interest in the need to deliver sustainable lighting, building on the methodology in CIBSE TM66 "Creating a Circular Economy in the Lighting Industry", specifically its Circular Economy Assessment method (CEAM). It provides robust third party assessment of claims made using the TM66 methodology and tools, increasing confidence that products are truly compliant to the principles of the circular economy and reducing the environmental impact of lighting.

TM66's Circular Economy Assessment Method (CEAM) is a self-certification metric that allows a manufacturer or interested party to evaluate and quantify the circular economy performance of a luminaire to enable comparison between products fulfilling the same function.

An effective sustainability metric delivers:

- Clarity and transparency
- Measurement – the degree of sustainability
- A transition tool that helps plan and report on the transition and direction of travel.

Sustainability metrics can have a problem of interpretation, different evaluators using different interpretations of the same question, or the answer to a question will yield different results making comparisons between products difficult. TM66 Assured is a programme of trained, independent, 3rd party assessment that reviews both the sustainability performance claims and the evidence given to support those claims. The result is a greater level of confidence in any one CEAM score and therefore comparisons between those scores.

2 DEFINITIONS & ABBREVIATIONS

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

BOM	Bill of materials
CEAM	Circular Economy Assessment Method
EPD	Environmental Product Declaration
FPC	Factory Production Control
LCA	Life Cycle Assessment
LCI	Life Cycle Inventory
LUMINAIRE	Apparatus which distributes filters or transforms the light transmitted from one or more lamps.
NCR	Non Conformance Report
MTBF	Mean Time Before Failure
PCB	Printed Circuit Board
PVT	Product Verification Test
QMS	Quality Management System
Scope	Detailed specification of certified products and associated components.
Taxonomy	A classification system to help investors, companies and policymakers to identify economic activities that can be considered sustainable.
TM65	CIBSE Technical Memorandum TM65 Embodied Carbon in building services: calculation methodology and Embodied Carbon Calculator.
TM66	CIBSE Technical Memorandum TM66 Creating a circular economy in the lighting industry

The definitions given in TM66 and CEAM.

3 SCOPE

This scheme has been developed by the LIA Ltd and CIBSE as a basis of 3rd party assurance of self-assessed CEAM ratings for Luminaires and associated products. It should be used in accordance with TM66 and CEAM.

The requirements of TM66 and CEAM cover requirements for circular economy assessment of the:

- Product design,
- Manufacturing process,
- Product materials,
- Product impact on ecosystem.

4 SCHEME REQUIREMENTS

4.1 Technical Conformity

The product shall have been self-assessed in line with requirements of documents TM66 and CEAM. No deviations to the self-assessment process are accepted, all relevant tabs and questions of the CEAM shall be completed, each with sufficient, relevant and provable evidence as to the why each individual line rating has been awarded. Only self-assessments that are in line with the CEAM can be accepted for TM66 Assurance.

Product families may be TM66 assured (if requested). Product family self-assessments submitted for TM66 Assurance must be accompanied by reasonable evidence that each member of the family does not materially vary in circular economy performance from any other.. Representative product(s) shall be selected by the certification body.

The assurance process is based on evaluation of evidence provided by the submitting party. This includes correctly filled document CEAM and any relevant evidence that supports the information in the CEAM (BOM, photos of the product, information about components and their supply chain, materials and fixings of the product, etc.).

In addition, the physical sample of the representative product (selected by LIA/CIBSE representative) shall always be provided for the assessment.

A positive assurance decision will be granted to any product/product family assessment(s), as provided by the client (CEAM document and supporting documentation) that meets the pass criteria of 70% of TM66 Assured evaluation scheme and supporting evidence, as conducted by certification body.

4.1.1 Method and marking criteria

Every question score selection and its accompanying evidence (for all four tabs) shall be marked against the CIBSE LIA's marking criteria. When the average mark for the marking criteria across all questions for all four tabs exceeds 70% then the self-assessment shall be deemed to have passed and be eligible for certification. Where the situation arises that evidence provided indicates that the self-assessed score is different to CIBSE LIA's marking criteria, on one or more criteria, then providing that the average mark still exceeds 70%, a certificate will be awarded but only at the new CEAM rating as calculated by CIBSE LIA, this will be notified to the client. The client can then appeal the decision, see appeals procedure below, or shall accept it. On acceptance the client shall have a period of 3 months to show the revised score in all product and marketing literature or any database or digital tool where the product is included.

4.1.2 Family variants

Where a particular product has family variants these may be assessed as families but will be considered by CIBSE and the LIA Ltd as the 3rd party assurance body on a case by case basis.

When selecting type test sample(s) from a range of products of similar construction for type test verification, the product(s) chosen shall be those which display the representative combination of BOM, supply chain, materials and manufacturing in the product(s) in combination with the highest expected sales volume. Do not submit a best case product that is not likely to be representative of typical sales.

The range of products shall be manufactured by the same manufacturer, under the same quality assurance system. The type variants of the range should be essentially identical with the respect to materials used, components and technology applied.

The differences to consider during evaluation of the family variants can include (but not limited to):

- Construction,
- Bill of Materials (BOM)
- Materials (diffusers, covers, etc.),
- Shape, size and weight,
- Factory (in case the product can be assembled in more than one factory)
- Supply Chain
- Ecosystem
- Warranties.

Note the need for granular detail on evaluating families, for example all drivers share the same supply chain and MTBF. If alternative LED modules and/or drivers are used within family range, information about all alternative components will be required for certification process.

If one or more products of a family varies significantly to the rest of the family (either positively or negatively) this shall be declared at submission.

4.2 Certification Period

4.2.1 Certification duration

Following a successful CIBSE LIA TM66 Assured 3rd party assessment a certificate will be issued. The certification period will run for 3 years from the date of issue. Prior to the end of the 3 year period customer may request to reissue the certificate and commence a new certification cycle of 3 years. In such case a review shall be undertaken to determine whether it is appropriate. The purpose of the review is to assess whether:

- Any of the supporting documents (TM66, CEAM) or scheme requirements have been updated since the initial assessment.
- The product(s) range falling under the scope of certification needs to be increased / decreased.
- The products themselves have undergone any changes in design or composition.
- There have been changes to production location or facilities.

The impact of any such changes on the validity of the initial CIBSE LIA TM66 Assurance 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 changes are identified, which affect the CEAM rating, the certificate may be suspended or withdrawn. Minor changes, resulting in a change or rating will result in an amended certificate displaying that new rating to be issued, which will then be valid for a period of 3 years. Significant changes will require the 3rd party assurance process to start from fresh.

If an assurance certificate is amended or withdrawn by CIBSE LIA, the client will be notified and product shall not be marketed based on the results of withdrawal certificate after a period of 3 months. This includes all product and marketing literature or any database or digital tool where the product is included.

4.2.2 Changes during certification

In addition to the re-certification review, it is the responsibility of the customer to inform CIBSE LIA TM66 Assured of any changes that occur affecting certification as identified in

4.2.1 within the certification period. Customer shall contact CIBSE LIA TM66 Assured before applying the changes.

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

Where no significant changes are identified, and on-going conformity to the previous CEAM rating 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, actions necessary to address these changes will be communicated to the customer. The certificate may be suspended or withdrawn until the issues have been addressed satisfactorily.

4.3 Documentation for certification evaluation

4.3.1 Circular Economy

The Circular Economy Assessment Method documentation provided as evidence for this CIBSE LIA 3rd Party Assessment is divided into four areas:

- Product Design,
- Manufacturing process,
- Materials and
- Impact on ecosystem

CIBSE LIA Laboratory TM66 Assured will conduct a review of the evidence of product(s) to be certified to determine the conformity of the self-assessed CEAM rating against product specification and TM66 and CEAM requirements.

The company logo (if available) shall be provided by the client (applicant). If certification process is successful, the company logo will be present on the TM66 Assured Product conformity certificate.

Additionally, by providing the company logo, the client gives permission for use of the company logo on TM66 Assured website/microsite.

4.3.2 Product Design

The client shall provide sufficient evidence supporting each question in the submitted self-assessed CEAM rating in document CEAM, provided for certification.

The provided evidence shall support:

4.3.2.1 Reusability

- Type of the luminaire,
- Prod 1 Range of optics,
- Prod 2 Optics, availability of parts,
- Prod 3 Range of accessories,
- Prod 4 Accessories, availability of parts.

4.3.2.2 Upgradability

- Prod 5 Ease of upgrading light source (Note: list of all alternative light sources and relevant documentation is required),
- Prod 6 Effect of light source upgrade on thermal performance,
- Prod 7 Ease of configuring upgrade, including plugs, socket-outlets and driver settings,
- Prod 8 Availability of upgrade light sources.

4.3.2.3 Burning hours and/or monitoring

- Prod 9 Easy of determining driver burning hours,
- Prod 10 Easy of determining light source burning hours,
- Prod 11 Externally visible date of manufacture,
- Prod 12 Externally visible serial number and QR code that leads to photometry results,
- Prod 13 Externally visible serial number and QR code that leads to luminaire log book.

4.3.2.4 Repairability and modular components

- Prod 14 Body parts – access for repairs, dismantling, upgrade, repurposing,
- Prod 15 Body parts – availability of brackets, gaskets, grommets, glands, glasses, trim plates,
- Prod 16 Replaceability of the driver,
- Prod 17 Replaceability of the light source.

4.3.2.5 Durability

- Prod 18 Body life,
- Prod 19 Driver life (Note; list of all alternative drivers and relevant documentation is required),
- Prod 20 Light source life,
- Prod 21 Optics life,
- Prod 22 Resilience features (surge protection, bypassing of failed LED module in chain).

4.3.2.6 Harmonise component usage (components variations)

- Prod 23 Material reduction,
- Prod 24 BOM count reduction,
- Prod 25 Unique materials.

4.3.2.7 Fixing screws, adhesives

- Prod 26 Screws vs adhesives (potting, encapsulation),
- Prod 27 Permanently joined dissimilar materials.

4.3.2.8 Design for remanufacture

- Prod 28 Paints and finishes.
- Prod 29 Re-use kits and parts

4.3.2.9 Resilience to digital control obsolescence

- Prod 30 Protocols and vendors.

4.3.2.10 Proof of circular performance claims

- Prod 31 Photometry,
- Prod 32 Lumen maintenance.

4.3.2.11 Competence and buy in

- Prod 33 Buy in, competence and training of design team.

4.3.3 Manufacturing process

The client shall provide sufficient evidence supporting the information in document CEAM, provided for certification.

The provided evidence shall support:

4.3.3.1 Manufacturing cost

- Mnf 1 Final product manufacturing cost (excluding profits, marketing or sales costs) comprised of in-house manufacture.

4.3.3.2 Geographical distance

- Mnf 2 Average geographical distance of supply chain partner from final assembly location,
- Mnf 3 Geographical distance from final assembly to site,
- Mnf 4 Geographical distance from remanufacturing facility to site.

4.3.3.3 Supply chain

- Mnf 5 Communication between manufacturer and suppliers,
- Mnf 6 Supply chain buying, competence and training.

4.3.3.4 In-house closed-loop manufacturing

- Mnf 7 Amount of unreusable waste by weight reduced in key material cycles,
- Mnf 8 Additive manufactured (3D printed) parts,
- Mnf 9 Subtractive manufacturing (amount of subtractive waste produced).

4.3.3.5 Corporate social responsibility and skills

- Mnf 10 Training,
- Mnf 11 Skilled labour (based in areas of economic deprivation),
- Mnf 12 Employee ownership,
- Mnf 13 Corporate social responsibility.

4.3.4 Materials

The client shall provide sufficient evidence supporting the information in document CEAM, provided for certification.

The provided evidence shall support:

4.3.4.1 Materials in general

- Mat 1 Proportion of re-used components,
- Mat 2 Proportion of recycled materials,
- Mat 3 Use of marked plastics identified by type.

4.3.4.2 Natural materials and bioplastics

- Mat 4 Use of biodegradable materials (wood, leather, cork, bioplastic),
- Mat 5 Integration of natural/biodegradable materials.

4.3.4.3 Innovative sustainable materials

- Mat 6 Innovative sustainable materials, evidence that they do not form a problem in any recycling/reuse stream.

4.3.4.4 Packaging materials

- Mat 7 Natural/biodegradable packaging materials are used.

4.3.5 Impact on ecosystem

The client shall provide sufficient evidence supporting the information in document CEAM, provided for certification.

The provided evidence shall support:

4.3.5.1 Product reuse

- Eco 1 Systems and resources to repurpose and ultimately recycle products.
- Eco 2 Reusable packaging.
- Eco 3 Possible on-site product upgrade by client.
- Eco 4 Possible on-site product upgrade by manufacturer.
- Eco 5 Systems that allows effective spot repair/refurbishment (reducing unnecessary scrapping).

4.3.5.2 Reverse logistics

- Eco 6 Reverse logistic is in place to recover luminaires from site in highest value state.

4.3.5.3 Access to accurate photometry

- Eco 7 Availability of the photometry data after recovery from initial installation.

4.3.5.4 Supplier commitment to support

- Eco 8 Supplier commitment to ensure spare parts availability beyond last fitting sold into market.
- Eco 9 Supplier commitment to ensure technical support availability beyond last fitting sold into market.

4.3.5.5 Warranties

- Eco 10 Length of the warranty (as it directly affects potential reuse of a luminaire).
- Eco 12 Beneficiary of the warranty.
- Eco 13 Transferable warranty.

4.3.5.6 Competence and buy-in

- Eco 14 Training of product designers.

5 IDENTIFICATION AND USE OF THE CERTIFICATION LOGOS

Customer is not allowed to use TM66 Assured / CIBSE LIA Verified logo. Logo usage policy is explained in LIA Ltd. document LUG007.

The logo shall only be used once all stages of the TM66 Assured Product Verification certification scheme process are successful.

The TM66 Assured / CIBSE LIA Verified logo remains the property of LIA/CIBSE and it's only permitted to be used in accordance with this document (and LUG007).

After successful certification process customer will be awarded with TM66 Assured Product verification certificate with unique certification number (and company logo).

Validity of the certificate can be checked directly in LIA Laboratory certificates database www.lialabcert.org.uk/certificates-search

Certification logo



6 ACCESS TO FACILITIES AND INFORMATION

Where a complaint is received by the CIBSE LIA TM66 Assured regarding a product and/or data covered by the Scheme, the customer will make available to the CIBSE LIA TM66 Assured 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 Laboratory's ISO/IEC 17065 schedule of accreditation with UKAS, there may be a need to allow third party access to manufacturer's facilities during the assessment process. It should be noted that the

customer 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 Laboratory's impartiality policy along with the Terms & Conditions of this Scheme can be found on

https://www.thelia.org.uk/general/custom.asp?page=Lab_Certification_Services

Alternatively a copy can be requested by e-mail at TM66@thelia.org.uk.

8 APPLICATION

An application form for this Scheme can be downloaded from

https://www.thelia.org.uk/page/TM66_Circularity

Alternatively a copy can be requested by e-mail at TM66@thelia.org.uk.

9 SCHEME FEES

TM66 Circular Economy Assured Beta is free to TM66 Founding Partners whilst still in the scheme testing and development stage and only for a strictly limited number of products per submitting company. After this the cost of product assessment shall be borne by the manufacturer.

The exact cost for a complete assessment will be determined on a case by case basis. A quotation with a complete breakdown of costs will be provided prior to commencing any certification activities.

10 APPEALS

Any appeals shall be put in writing to the LIA CIBSE. The appeal investigation will be conducted by personnel who were not involved in the original assessment process in order to ensure impartiality.

Further details of the complaints and appeals process is available on request. In the event that the LIA CIBSE appeals process cannot resolve a dispute, the matter shall be taken to an independent person or body such as a specialist arbitrator or tribunal. Where upon their ultimate decision will be final.

11 ADDITIONAL INFORMATION

Details of the evaluation process, rules and procedures for granting, maintaining, extending or reducing the scope, for suspending and for withdrawing certification can be requested by email at TM66@thelia.org.uk.

ANNEX 1 – REFERENCE DOCUMENTS

TM66	Creating a circular economy in the lighting industry
TM65	Embodied carbon in building services: A calculation methodology
CEAM	Circular Economy Assessment Method
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

Note: Where a document is referenced the latest valid version of the document shall be used.