Triple E Register Eligibility Criteria

Category: **Lighting**

Technology: **Lighting Units**

Lighting units are products that are specifically designed to provide high efficiency interior or exterior illumination.

Lighting units are considered to include:

Building Luminaires
These high efficiency luminaires are generally for internal use but may also include flood lights and exterior amenity lanterns. They can include both light emitting diode (LED) and non LED luminaires according to the definition of each type given below.

Street-lighting luminaires
High efficiency lanterns designed specifically for illuminating roads and car parks. They can include both light emitting diode (LED) and non LED luminaires according to the definition of each type given below.

Light emitting diode (LED) lamps:
LED Lamps are solid state lighting devices consisting of a lamp with LED's, integrated LED driver and lamp base suitable for existing light fittings.

Luminaire type definition:

Non LED luminaires:
*High efficiency luminaires consist of a light fitting, one or more lamps and associated electronic control gear**

Light emitting diode (LED) luminaires:
LED luminaires are solid state lighting devices consisting of a light fitting, one or more LED light sources, optical system and associated LED driver.

Note: Luminaires designed specifically for emergency lighting are not included under the Triple E scheme

Eligibility Criteria:

In order to be included on the Triple E product register*, Lighting *units* must meet the relevant requirement set out below.

Note: *Supporting documentation that clearly demonstrates Triple E compliance according to the conditions below will be required as part of the Triple E checking process. Detailed information on the types of documents accepted can be found in the separate Supporting Documentation guidelines.*

*known as the specified list in the Finance Act

General eligibility criteria

(Applicable to all Lighting Units)

No.	Condition
1.	All equipment and/or components must be CE marked as required by the specific EU directive(s).
2.	Must have a minimum power factor of 0.7 at all levels of product light output
3.	For **non LED luminaires**: The photometric data of the luminaire must have been measured and tested in accordance with EN 13032-1&2 "Light and lighting – Measurement and presentation of photometric data of lamps and Luminaires" **Or** For **LED luminaires** The photometric data of the luminaire or lamp must have been measured and tested in accordance with IES LM-79-08 "Electrical and photometric measurements of Solid-State lighting products" or EN 13032-1&2 "Light and lighting – Measurement and presentation of photometric data of lamps and Luminaires" **Or** For **LED lamps** The photometric data of the luminaire or lamp must have been measured and tested in accordance with IES LM-79-08 "Electrical and photometric measurements of Solid-State lighting products".
4.	**Luminaires** must meet the minimum efficacy criteria required in Table 1. Or **Lamps** must meet the minimum efficacy criteria required in Table 2.

Building Luminaires and Street Lighting - Non LED– specific eligibility criteria

(to be met in addition to the general eligibility criteria 1-4)

No.	Condition
5.	All lamps and control gear must be ENEC marked or comply with the relevant performance standards.

Building Luminaires and Street Lighting

LED and LED lamps – specific eligibility criteria

(to be met in addition to the general eligibility criteria 1-4)

No.	Condition
6.	Must have a light output (in lumens) not less than 90% of initial[1] light output after 6,000 hours of continuous operation.
7.	A minimum lumen output of 250 lumens for the whole luminaire.
8.	A colour rendering index not less than: Ra80 for Building Luminaires and Lamps Ra65 for Street lighting Luminaires
9.	A rated Correlated Colour Temperature between 2500 and 6500K

[1] Initial lumens measured after 100 hours operation.

Table 1 – Luminaires: Minimum efficacies table for Luminaires

Luminare type	**Minimum efficacy (l l/cW)**
• Building Luminaires	
High-pressure sodium ≥250W per lamp*	80
High-pressure sodium <250W per lamp*	65
Metal halide*	65
Linear Fluorescent*	60
Compact Fluorescent*	55
Induction	55
LED	75
• Street-Lighting Luminaires	
Street-lighting	80

Linear and Compact Fluorescent and HID luminaires must have High frequency control gear incorporated into the fitting

* Lamp rating

For all luminaires the ll/cW calculation is:

ll/cW = Luminaire Lumens per circuit Watts

$$= \frac{\text{Total Lumen Output x Light Output Ratio}}{\text{Circuit Power Drawn}}$$

Where:

- Total lumen output (Lumens)= the total light output of all the lamps in the fitting (measured in Lumens),
- Light Output Ratio (LOR) = ULOR and DLOR values may be combined where the fitting is designed to provide direct *and* indirect lighting, otherwise only the LOR in the intended lighting direction may be used.
- Circuit Power Drawn (Watts) = the electrical power drawn by the whole luminaire from main circuit connection point to lamp, including losses in the control gear (ballast).

Table 2 – Lamps: Minimum efficacies table for LED lamps

LED Lamptype	**Minimum efficacy l/cW**
LED lamps excluding LED Tubes	60
LED tubes	90

l/cW = Lumens per circuit Watts

= total lumen output
circuit power drawn

Where:

- Total lumen output (Lumens)= the total light output of the lamp
- Circuit Power Drawn (Watts) = the electrical power drawn by the whole lamp, including losses in the LED driver.

---------- End of Triple E eligibility criteria ----------

Please see next section for guidance on:

1. **Technical details required in product submission**
2. **Supporting documentation required**

Guidance on product details and supporting documentation

NOTE: The following information is not part of the official criteria document published within the relevant Statutory Instrument. It has been added here for guidance purposes only in order to help you to provide (a) product details and (b) the required supporting documentation.

All information contained in this guidance document is subject to change without notice.

Technical information required in product submission

The following are the specific technical values required as part of the product submission for this technology:

Lighting unit type
As part of the product submission you must first select which type of lighting product your product is. Only one type can be chosen per product.

Fitting Light Output Ratio (LOR)
For all lighting types except LED lamps the LOR must be submitted here. For luminaires tested according to LM79-08 the LOR should be entered as 100. It must be entered as a whole number only, e.g. 75% is entered as 75 and not as 0.75 or 75%. There should also be no spaces or full stops after the number submitted.

Lighting Unit Power Rating
For all lighting types the total circuit power consumption in Watts must be submitted here. This is for the actual power consumed by the complete lighting unit and includes the Ballast or Driver power consumption. It must be entered as a number only (do not include units). There should also be no spaces or full stops after the number submitted.

Total Lumens output
For all lighting types the total lumens output must be submitted here. This is the lumen output for the replacement LED lamp or all the lamps in the lighting unit, or for the full fitting in the case of LED luminaires. It must be entered as a number only (do not include units). There should also be no spaces or full stops after the number submitted.

> **Note** that in the case of LED's the lumens output figure is that measured after 100 hours of continuous operation.

Lighting unit efficacy ([L]L/CW)
The efficacy is automatically calculated during the submission process and only products which meet the minimum criteria levels will be successfully submitted.

- For luminaires this figure is a multiple of the total lamp lumens and the Light Output Ratio in the intended direction divided by the total circuit watts consumed by the lamps and control gear. The definition is Luminaire Lumens per Circuit Watts (LL/CW).

- For LED replacement lamps the value is the measured lumen output of the whole lamp divided by the total circuit watts consumed by the lamp and control gear (driver). The definition is Lamp Lumens per Circuit Watts (L/CW)

Supporting documentation required

Described below is the list of documents that are accepted as proof of compliance for the specific Lighting conditions.

Note: This information will only be requested AFTER you submit your product's basic details online. However, Product Providers are advised to familiarise themselves with the requirements before submitting their products.

Note: All documentation submitted will be treated as strictly confidential by SEAI.

Alternative Documentation for IEC62722-2-1 Compliant LED Luminaires

If product providers can demonstrate that testing has been carried out in compliance with IEC62722-2-1 they may submit alternative documentation for Conditions 3,6,7,8 and 9. This documentation shall take the form of the Product Information sheet (Table 1 Section 4 IEC62722-2-1)

A Certificate of Compliance or an official and published manufacturer's technical data sheet or brochure must be provided to demonstrate compliance with the standard.

Alternative Documentation for Luminaires with IEC62717 Compliant LED Modules

IEC62722-2-1 presents reduced product testing requirements for luminaires utilising IEC62717 compliant modules. These principles have been applied here in Conditions 6,8,and 9.

A Certificate of Compliance or an official and published manufacturer's technical data sheet or brochure must be provided to demonstrate compliance with the standard.

Important Notes to Product Providers
Please ensure that you read the "Important Notes to Product Providers" section at the end of this document prior to submitting documentation.

General eligibility criteria

No.	Condition	Supporting Documentation Requirement
1	All equipment and/or components must be CE marked as required by the specific EU directive(s).	CE Certificate of Compliance from accredited test facility **OR** A copy of an official signed declaration on headed paper that confirms CE marking compliance. Certificates of Conformity and official declarations should explicitly state the products for which CE marking is being confirmed (i.e. do not provide a letter simply stating general compliance with the relevant Triple E condition). Where a document is used to demonstrate conformance for a number of products or range of products, it should clearly specify each individual product covered by that document. Certificates of Conformity and official declarations must list the standards and directives for which compliance is certified or declared
2.	Must have a minimum power factor of 0.7 at all levels of product light output	Official and published manufacturer's technical data sheet or brochure that demonstrates compliance with the requirements of the condition. **OR** For LED luminaires & lamps: A copy of the LM79-08 test report (see Condition 3) indicating a tested value for Power Factor

No.	Condition	Supporting Documentation Requirement
3.	For **non LED luminaires**: The photometric data of the luminaire must have been measured and tested in accordance with EN 13032-1&2 "Light and lighting – Measurement and presentation of photometric data of lamps and Luminaires" **For LED luminaires:** The photometric data of the luminaire must have been measured and tested in accordance with EN 13032-1&2 "Light and lighting – Measurement and presentation of photometric data of lamps and Luminaires" OR The photometric data of the luminaire must have been measured and tested in accordance with IES LM-79-08 "Electrical and photometric measurements of Solid-State lighting products". For **LED lamps** The photometric data of the lamp must have been measured and tested in accordance with IES LM-79-08 "Electrical and photometric measurements of Solid-State lighting products".	**Supporting Documentation Requirements** For non-LED luminaires: Evidence of official photometric testing by manufacturer or independent test lab based on the principles of EN 13032 **and** a copy of the lighting data file in original format (*.ldt or *.ies) and pdf format is required. For LED luminaires: Evidence of that official testing by manufacturer or independent test lab has been performed in accordance with LM79-08, together with a copy of the LM79 test report is required Or Evidence of official photometric testing by manufacturer or independent test lab based on the principles of EN 13032 **and** a copy of the lighting data file in original format (*.ldt or *.ies) and pdf format is required. For LED lamps: Evidence of that official testing by manufacturer or independent test lab has been performed in accordance with LM79-08, together with a copy of the LM79 test report is required All evidence that is supplied MUST refer to the entire lighting unit (i.e. fitting, control gear and lamp). When submitting a batch of luminaires of the same base design with different power ratings and distribution patterns the product provider should refer to the section on representative testing in the the "Important Notes to Product Providers" at the end of this document. **<u>Alternative Documentation for IEC62722-2-1 Compliant LED Luminaires</u>** • Product Information Sheet indicating values for Rated Input Power and Rated Luminous Flux • An official and published manufacturer's technical data sheet or brochure demonstrating compliance with the standard

No.	Condition	Supporting Documentation Requirement
4.	**Luminaires** must meet the minimum efficacy criteria required in Table 1. OR **Lamps** must meet the minimum efficacy criteria required in Table 2.	Evidence of official photometric testing by manufacturer or independent test lab based on the principles of EN 13032 or LM 79-08 as per condition 3. The calculation MUST refer to the entire lighting unit (i.e. Fitting, Control Gear and Lamp), and not individual components. The evidence supplied should detail the LL/cW calculation, clearly showing the method by which the efficacy figure (as measured in Luminaire Lumens per circuit Watts) was achieved and detailing where the figures used during the calculation (lamp lumens, LOR, power consumption) can be referenced in the photometric report. **Note:** • For all fluorescent fittings evidence of the use of electronic control gear must be provided. • The lamp or luminaire lumens per circuit watt value is not necessarily the LED manufacturer's lumens per watt value, it is the final efficacy of the complete lamp or luminaire. A complete lamp or luminaire is considered to include the LED light source, integrated or associated driver, optics (and for lamps, a suitable socket in which it is operated). **For LED and non-LED Luminaires tested in accordance with EN13032:** The LL/CW calculation multiplies the total output of the lamps (Lumens) and the efficiency of the fitting in redirecting the light (Light Output Ratio, LOR) and divides by the power drawn by lamps and all the associated control gear (measured in Watts). The output figure is Luminaire Lumens per circuit Watts (LL/cW). **For LED Luminaires and LED Lamps tested in accordance with LM-79-08:** The LL/CW calculation divides the total output of the lamp (Lumens) by the power drawn by lamp and all the associated control gear (measured in Watts). I.e. LED lamps undergo absolute photometric performance testing which does not include measurement of LOR. The output figure is Lumens per circuit Watts (L/cW). **Note:** All measurements must be taken after the junction temperature has stabilised to a constant level.

Building Luminaires and Street Lighting - Non LED– specific eligibility criteria

No.	Condition	Supporting Documentation Requirement
5.	All lamps and control gear must be ENEC marked or comply with the relevant performance standards.	**For lamps and Control Gear <u>with</u> ENEC marking only:** Official and published manufacturer's technical data sheet or brochure that demonstrates ENEC marking compliance **OR** A copy of an official signed declaration on headed paper that confirms ENEC marking compliance. **For all lamps and Control Gear <u>without</u> ENEC marking:** Official and published manufacturer's technical data sheet or brochure that demonstrates compliance to the relevant performance standard(s) and an official signed declaration on headed paper confirming that the luminaire is only supplied with lamps that comply with the relevant performance standards **OR** An official signed declaration on headed paper confirming compliance with the relevant performance standard(s) and confirming that the luminaire is only supplied with lamps that comply with the relevant performance standards **Note:** ➢ Where a datasheet or brochure is used to demonstrate conformance for a number of products or range of products, it should clearly specify each individual product covered by that document. ➢ Official declarations should explicitly state the product for which the performance standard(s) or ENEC marking are being confirmed. Relevant standards must also be clearly listed. (i.e. do not provide a letter simply stating general compliance with the relevant Triple E condition). ➢ *Continued overleaf……*

		<u>Relevant performance standards are:</u> **Fluorescent control gear:** I.S. EN 61347-1; I.S. EN61347-2-3; I.S. EN60929; I.S. EN61547; I.S. EN62386 Parts 101, 102 and 201 (for Digital Addressable control gear only) **Discharge control gear:** I.S. EN61347-1; I.S. EN61347-2-9 (magnetic); I.S. EN61347-2-12 (electronic); I.S. EN61547 **Fluorescent lamps:** I.S. EN 60901 (single capped); I.S. EN60081 (double capped) **Discharge lamps:** I.S. EN60192 (LPS); I.S. EN60662 (HPS); I.S. EN61167 (MH)

Building Luminaires and Street Lighting LED and LED lamps – specific eligibility criteria

No.	Condition	Supporting Documentation Requirement
6.	Must have a light output (in lumens) not less than 90% of initial[2] light output after 6,000 hours of continuous operation .	Evidence of official lifetime (Lumens maintenance) testing by manufacturer or independent test laboratory carried out according to the principles outlined in the named standards. The documentation required depends on whether the submitted luminaire is Type A or Type B, which are defined as follows: Type A: Luminaires using LED modules where compliance with IEC62717 has been proven Type B: Luminaires using LED packages or arrays, or LED modules where compliance with IEC62717 has not been proven. LED lamps will require the same documentation as Type B luminaires <u>Documentation required for Type A luminaires</u> IEC62717 requires that LED modules be operated within their t_p limit for the declared rated lifetime performance. With the luminaire operating at its own maximum rated ambient temperature (t_q) the t_p limit for the declared performance shall not be exceeded. The t_p temperature shall be measured according to the thermal test procedure defined in 12.4 of IEC 60598-1. The product provider shall be required to provide : • Evidence that the module has been tested in accordance with IEC62717, in the form of an official and published datasheet • Complete performance data for the module, as per Table 1 of IEC62717, indicating a lumen maintenance code of 9. • The published module design guide indicating the t_p limit temperature for the module • Evidence of testing of t_p of the module within the luminaire in accordance with IEC60598-1 • Evidence that during the above testing the measured t_p does not exceed the t_p limit as defined in the module manufacturer's data.

No.	Condition	Supporting Documentation Requirement
		<u>Documentation required for Type B luminaires and LED lamps</u> There are two options for demonstrating compliance with this condition: 1. The Luminaire performance option demonstrates compliance with the lumen maintenance requirement by submitting : • (A) LM-79-08 test report at 100 hours • (B) LM-79-08 test report at ≥ 6,000 hours With Luminous flux (B) ≥ 90% (A) 2. LM80-08 option, which allows LM80 data for the LED package or array together with evidence of adherence with temperature boundary conditions to be used to demonstrate compliance. The following documentation shall be submitted: • Full LM80 report in the manufacturer's original format. Reports that have been cut and pasted into other documents are not acceptable. Full test reports showing complete datasets at the three temperatures are required, not summary reports • Thermal test report demonstrating that when in-situ in the luminaire the LED package case temperature T_s as defined by LM80 does not exceed the limit temperature T_s taken from the LM80 report **<u>Alternative Documentation for IEC62722-2-1 Compliant LED Luminaires</u>** • Product Information Sheet indicating a Lumen Maintenance Code value of 9 • An official and published manufacturer's technical data sheet or brochure demonstrating compliance with the standard
7.	Must have a minimum lumen output of 250 lumens for the whole luminaire.	To demonstrate compliance with this requirement, independent or accredited manufacturers photometric testing of the complete lamp or luminaire must be provided. All photometric data recorded must be based on the principles of EN 13032 or LM 79-08 as per condition 3.

No.	Condition	Supporting Documentation Requirement
8.	Must have a colour rendering index not less than: Ra80 for Building Luminaires and Lamps Ra65 for Street lighting Luminaires If a Building Luminaire is clearly intended for external use only Ra65 will be acceptable	Official and published manufacturer's technical data sheet, brochure or test report that demonstrates compliance with this requirement. OR LM79-08 test report indicating measured value for Ra If a Building Luminaire with 65< Ra <80 is intended for external use only this is to be demonstrated by the submission of a standard product brochure **<u>Alternative Documentation for IEC62722-2-1 Compliant LED Luminaires</u>** • Product Information Sheet indicating value for CRI • An official and published manufacturer's technical data sheet or brochure demonstrating compliance with the standard **<u>Alternative Documentation for Luminaires Using IEC62717 Compliant Modules</u>** • Module Product Information Sheet indicating values for CRI • An official and published module manufacturer's technical data sheet or brochure demonstrating compliance with the standard

No.	Condition	Supporting Documentation Requirement
9.	Must have a rated Correlated Colour Temperature between 2500 and 6500K	Official and published manufacturer's technical data sheet, brochure or test report that demonstrates compliance with this requirement. OR LM79-08 test report indicating measured value for CCT **Alternative Documentation for IEC62722-2-1 Compliant LED Luminaires** • Product Information Sheet indicating value for Correlated Colour Temperature • An official and published manufacturer's technical data sheet or brochure demonstrating compliance with the standard **Alternative Documentation for Luminaires Using IEC62717 Compliant Modules** • Module Product Information Sheet indicating values for Correlated Colour Temperature • An official and published module manufacturer's technical data sheet or brochure demonstrating compliance with the standard

Important Notes to Product Providers

General

There should be a clear link between all supporting documentation supplied and the product being submitted. This will typically take the form of a product code or product name that can be cross referenced between the submitted product and relevant supporting documentation. If product codes / names have been changed since publication of the supporting documentation, then official evidence of this must be provided with the supporting documentation supplied.

Any deviation from these requirements will result in the supporting documentation not being considered adequate for the purposes of demonstrating compliance with the criteria conditions. This will in turn delay the submission and/or result in the product not being considered eligible.

Where the Triple E criteria or help documentation reference compliance to appropriate rather than specific standards, the onus is on the product provider to ensure that supporting documentation supplied references recognised standards that apply to the submitted product, i.e. the product must be covered under the scope of a recognised standard.

If any product submitted is later found not to meet the performance or specification criteria, then this product will cease to be considered eligible for the Triple E.

Note: When supplying the supporting documentation through the online process you must ensure that the correct page number(s) of the document is referenced when compliance with the relevant condition is being demonstrated. An explanatory note should also be given where more than one page number is referenced.

Test Reports

All documents should be on headed paper and the document should be officially signed off.

Performance testing is to be done in an accredited test facility:

Product Type	Accreditation required
Non-LED luminaires	En13032
LED luminaires	LM79-08 or EN13032
LED lamps	LM79-08

Documentary evidence of accreditation is to be provided.

The following should be borne in mind regarding the test reports.

- Test certificates must clearly relate to the actual product in question;
- Installation instructions in the test certificate on which the stated performance depends must be adhered to;
- Test certificates must be in English or be accompanied by a certified English translation. The translation can be from the accredited test house or from a professional translator listed by the Irish Translators and Interpreters Association or international equivalent;

- The relevant test performance standard must be stated on the test certificate.

All test reports submitted are to be clearly identifiable as being for the submitted product. If the product reference on the test report differs from the product reference for the submitted product a signed declaration on company headed paper is required stating that the products are the same.

Submitted values for Lighting Unit Power Rating, Total Lumens Output and Light Output Ratio must correspond to the values in the test reports. For LED products, due to the rapidly developing technology and the improvements in efficacy, slight variations will be accepted, at SEAI's discretion, provided the overall efficacy calculated in accordance with the tested values is higher than the efficacy calculated using the submitted values.

Where certificates from an independent test lab are submitted, SEAI reserves the right to contact the test lab to verify the authenticity of the test reports.

Certification

Where certificates are provided, all tests must be carried out by an organisation that is accredited **, as per the requirements for test reports. All certificates must be in English or include an adequate translation as detailed above.**

Scientific Equivalence

Some Triple E criteria conditions allow for scientifically equivalent tests and/or standards to be used. In the event that a product has not been designed, manufactured or tested to the specific standard named, then documentation relating to an equivalent internationally recognised standard may be used (where the phrase 'Or scientific equivalent' is included in the Triple E condition or help documentation). In such applications, the onus will be on the product submitter to demonstrate satisfactory equivalence of the standards. However, submissions which reference such supporting documentation may take longer to process, and if the product provider does not provide satisfactory evidence of equivalence, then the product will not be considered eligible for the Triple E. **All documentation must be in English**, or include adequate translation.

Note: Where specific standards are cited in a condition or in the Triple E help documentation, then documentation demonstrating that the relevant products have been designed, manufactured or tested to these specific standards is preferred. Scientific equivalence is considered the exception rather than the norm.

Representative testing

Where test information is required for a range of technically similar products (e.g. configurations of one base product) then in exceptional instances a form of representative testing may be utilised once agreed in advance with SEAI. Such testing is where only representative products are tested from a technically similar group or range of products. Provided a clear correlation can be demonstrated between the tested product and technically similar non-tested product, and that such a correlation clearly demonstrates the compliance of the non-tested product, representative testing may form an acceptable basis for supporting documentation.

Representative testing will be accepted for LED products where the same basic product is available with different quantities of LED's in a module or array. It is accepted that efficacies

will be similar for all products in the range. For evidence of compliance with Condition 6 the product with the highest number of LED's and the most densely populated array will be selected for submission of supporting documentation.

Note: Where representative testing is used for a group or range of products, if the tested or representative product is removed from the list of eligible products then all related products are also removed.