

White Light Emitting Diode Lighting Units for Amenity, Accent and Display Lighting

Date added to ETL 2008 (Revised 2009).

1. Definition of Technology

White light emitting diode lighting units are products that are specifically designed to provide white light by means of solid-state lighting devices, for use in amenity, accent and display lighting.

2. Technology Description

White light emitting diodes (LEDs) are solid-state lighting devices that can be used to efficiently provide the levels of light output generally needed for amenity, accent and display lighting.

White LED lighting units are products that consist of one or more white LEDs, a light fitting (or luminaire) and associated electrical drive gear. The luminaire generally also include an optical system that reflects and/or focuses the product's light output onto the item(s) being illuminated.

A wide variety of LED lighting units are available in a range of designs with different performance levels. The ECA scheme aims to encourage the purchase of higher efficiency products.

The ECA Scheme covers six categories of products:

1. Recessed down lighting units
2. Spot lighting units
3. Task lighting units
4. Other directable lighting units
5. Linear display cabinets lighting units
6. Exterior flood lighting units

Investments in products containing white light emitting diode lighting units for amenity, accent and display lighting can only qualify for Enhanced Capital Allowances if the products meet the eligibility criteria set out below. The individual products purchased do not need to be named on the Energy Technology Product List.

3. Eligibility Criteria

To be eligible, products must:

- Include one or more solid-state LED devices, luminaire and associated electrical drive gear.
 - Provide white light with colour rendering index that is greater than, or equal to, Ra 70.
 - Emit at least (\geq) 95% of their light output in a forward direction.
 - Use electrical drive gear that complies with BS EN 61347-2-13:2006 and BS EN 62384:2006.
 - Have a power factor that is greater than, or equal to, 0.7 at all levels of product light output.
 - **Not** consume electricity when the LED unit is switched off.
 - Be CE Marked.
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Performance criteria

All products must:

- Provide a light output (i.e. level of illumination) when tested after 100 hours of continuous operation that is greater than, or equal to, the thresholds set out in Table 1 below, which vary with product category.
- Have an efficacy (i.e. lighting efficiency) that is greater than, or equal to, the thresholds set out in Table 1 below, when tested after 100 hours of continuous operation.
- Be able to provide a light output (in lumens) after 4000 hours of continuous operation that is not less than 96% of their light output (in lumens) after 100 hours of continuous operation.

Table 1 - Performance thresholds for white LED lighting units for amenity, accent and display lighting

Category of Product		Minimum required light output (Lumens) after 100 hours	Minimum efficacy (Lumens/watt)
1	Recessed down lighting units	>= 200	>= 46
2	Spot lighting units	>= 100 per head	>= 46
3	Task lighting units	>= 100	>= 46
4	Other directable lighting units	>= 200	>= 46
5	Linear display cabinets lighting units	>= 125 per linear foot	>= 46
6	Exterior flood lighting units	>= 200	>= 46

">=" means "greater than or equal to"

Where:

- Efficacy is defined in terms of lumens of light output per watt of electrical power consumed.
- The electrical power consumed is defined as the total power consumed by the whole lighting unit from main circuit connection point to 'lamp', including losses in the power supply and constant current source, and losses due to the effects of temperature. It is not the 'rated wattage' of the LED chip.
- The product must perform at the minimum required efficacy at each drive current for which the product is designed to operate, when tested after 100 hours of continuous operation.

For the avoidance of doubt test data should be presented to zero decimal places. As an example, an efficacy of 45 Lumens per watt for a task light unit would be deemed to be a fail.

Required test procedures

All products must be tested in accordance with the procedures laid down in:

- BS EN 13032-1:2004 'Light and lighting. Measurement and presentation of photometric data of lamps and luminaires. Measurement and file format'.

The following test conditions must be observed:

- All testing must be conducted on the complete product (i.e. solid state LED device(s), luminaire and associated electrical drive gear) and under normal operating conditions.
- Measurements of product light output must be taken after 100 hours and 4000 of continuous operation at the designed maximum drive current and with all optical components in situ.
- Measurements of product light output after 4000 hours must be made at the same drive current and junction temperature as measurements of product light output after 100 hours.
- Measurements of the product's light output and electrical power consumption at different drive currents must be taken after the junction temperature has stabilised to a constant level after selecting the particular drive current.

Where the product's light output after 4000 hours is calculated by measurement of light output after a longer period than 4000 hours, a linear degradation in light output (lumens) with respect to time, relative to product light output after 100 hours of continuous operation, must be assumed.

4. Scope of Claim

Expenditure on the provision of plant and machinery can include not only the actual costs of buying the equipment, but other direct costs such as the transport of the equipment to site, and some of the direct costs of installation. Clarity on the eligibility of direct costs is available from [HMRC](#).