

STANDARD INFORMATION

This SUN establishes the Continuing Certification approach to Light Emitting Diode (LED) Equipment for Lighting Applications

Standard Number: CSA C22.2 No. 250.13

Standard Name: Light Emitting Diode (LED) Equipment for Lighting Applications

Standard Edition and Issue Date: 3rd Edition Dated October 1, 2017

Date of Revision: October 1, 2017

Date of Previous Revision of Standard: July 1, 2014

EFFECTIVE DATE OF NEW/REVISED REQUIREMENTS

Effective Date: **No action is required for currently certified products to maintain certification.**

This SUN is being presented to assist users of the standard to appreciate the significance of the changes made to the standard that will apply should the product described be modified after March 2, 2020.

IMPACT, OVERVIEW, AND ACTION REQUIRED

Impact Statement: A review of all Listing Reports is necessary to determine which products comply with new/revised requirements and which products will require re-evaluation. **NOTE:** Effective immediately, this revised standard will be exclusively used for evaluation of new products unless the Applicant requests in writing that current requirements be used along with their understanding that their listings will be withdrawn on Effective Date noted above, unless the product is found to comply with new/revised requirements.

Overview of Changes:

- Added requirements for temperature test LED drivers identified as suitable for use with solid-state dimming controls wired in series with the mains supply
- Added marking requirements related to LED controlgear that may be marked “dimmable”, or intended to be used with identified dimmer manufacturer/models
- Added Annex F for requirements for LED controlgear incorporating means of protection against overheating (Class P).

Specific details of new/revised requirements are found in table below.

If the applicable requirements noted in the table are not described in your report(s), these requirements will need to be confirmed as met and added to your report(s) such as markings, instructions, test results, etc. (as required).



Client Action Required:

Information – To assist our Engineer with review of your Listing Reports, please submit technical information in response to the new/revised paragraphs noted in the attached or explain why these new/revised requirements do not apply to your product (s).

Current Listings Not Active? – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records. We will do this at no charge as long as Intertek is notified in writing prior to the review of your reports.

STANDARD INFORMATION

CLAUSE	VERDICT	COMMENT
		<i>Additions to existing requirements are underlined and deletions are shown lined out below.</i>
9	Info	Tests, procedures, and apparatus
9.3	Info	Temperature test
		<i>New clause added;</i>
		When an array (module) is provided with a manufacturer identified test reference point, the temperature test shall be performed as follows:
9.3.18.1		<ul style="list-style-type: none"> a) The array is attached to the heat sink (if any) provided or recommended by the manufacturer in accordance with the manufacturer’s instructions. b) The assembly is then placed in a still air test oven maintained at an ambient temperature of 40 °C (104 °F). c) The array is then operated until temperatures have stabilized. d) The temperature at the test reference point (see Clause 3) shall be recorded. e) The designated temperature for the test reference point shall be calculated using test results in Clause 9.3.1 as follows: <ul style="list-style-type: none"> i) For each of the parts noted in Table 8, the difference between the maximum temperature allowed per Table 8 and the observed temperature is calculated (Δt_1. . . Δt_n); ii) The smallest value of (Δt_1. . . Δt_n) is designated as Δt; and iii) Δt plus the temperature observed at the test reference point is the maximum designated value allowed for the test reference point. A lesser value may be stated by the manufacturer.
		<i>New clause added;</i>
9.3.18.2		In situations where optical radiation from the light source is expected to affect the accuracy of a temperature measurement, with the agreement of all parties



CLAUSE	VERDICT	COMMENT
		involved, linear regression may be used. A series of temperature measurements shall be taken at 5 second increments immediately after the light source has been de-energized for a total duration of 130 seconds. The data from the first 10 seconds shall be discarded, and the remaining 120 seconds of data plotted on a time versus temperature graph. Using a linear regression formula, the temperature at time zero shall be calculated and recorded to represent the temperature measurement value.
		<i>New clause added;</i>
9.3.19		LED controlgear marked or otherwise indicated by the manufacturer to be dimmable using a solid-state electronic dimming control that is electrically wired in series with the mains supply shall be subject to temperature testing procedures indicated in Clauses 9.3.20–9.3.22.
		<i>New clause added;</i>
		The LED controlgear shall be operated with the input power supply source configured for Test Methods 1, 2, and 3 (Items (i) and (ii)) or test Methods 1 and 4 (Items i) and ii)). Test Methods 1, 2, and 3 (Items i) and ii)) apply when the LED controlgear is marked or otherwise indicated by the manufacturer to be dimmable. Test Methods 1 and 4 apply when the LED controlgear is marked or otherwise indicated by the manufacturer for use with a specific dimmer. For all test methods, the LED controlgear output shall be connected to its rated load.
9.3.20		a) Method 1 — Mains supply: The LED controlgear shall be operated at rated input voltage directly from the mains supply. b) Method 2 — Half-wave rectified supply: The LED controlgear shall be operated from a source of supply with a single, appropriately rated semiconductor diode in series with the ungrounded conductor of the supply. c) Method 3 — Leading edge phase-cut dimmer: The LED controlgear shall be operated with an adjustable leading edge phase cut dimmer electrically wired in series with the supply. The dimmer shall not contain any components in its output circuitry for waveform smoothing. The dimmer shall produce an output waveform with a variable conduction angle similar to that depicted in Figure 3. This shall be confirmed by observing the input supply waveform to the LED controlgear using an oscilloscope. The dimmer shall be adjusted for i) maximum input current; and ii) maximum input power to the LED controlgear. d) Method 4: When an LED controlgear is marked or otherwise identified for use only with a specific dimmer, it shall be configured and tested with the dimmer adjusted for i) maximum input current; and ii) maximum input power to the LED controlgear.

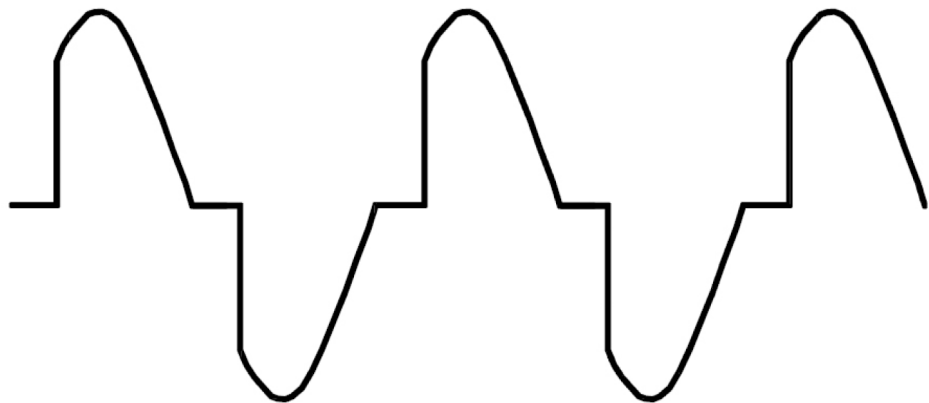


CLAUSE	VERDICT	COMMENT
--------	---------	---------

New figure added;

Leading edge phase-cut type dimmer output waveform

Figure 3



New clause added;

9.3.21

During testing described in Clause 9.3.20, the LED controlgear input and output supply electrical parameters (V, A, W), including image of the waveforms, shall be recorded to show the method of dimming used. The input current shall comply with Clause 9.2.2.

New clause added;

9.3.22

During the testing described in Clause 9.3.20, when possible, the same sample LED controlgear shall be used for all test methods.

9.6

Info

Circuit power limit measurement test

9.6.1

To determine the point beyond which a circuit is unable to deliver more than 50 W of available power, a wattmeter and an adjustable external load resistor shall be arranged as shown in Figure 3. Power limitation may be accomplished by a) the inherent design of the circuit (see Clause 9.6.2); b) the opening of a circuit component (see Clause 9.6.3); or c) the opening of a protective device (see Clause 9.6.4).

This test shall be used to determine if the power available to a circuit under any loading condition, including short circuit, measured after 1 min of operation exceeds a defined limit. For the purposes of this test, the limit (for example, 15 W or 50 W) is referred to as PLIMIT.

9.6.2

The external adjustable load resistor shall be set initially for its maximum resistance. The adjustable resistance shall then be reduced gradually to the point of maximum delivery wattage, as indicated by a peak reading on the wattmeter.



CLAUSE	VERDICT	COMMENT
		<p><u>The point in the circuit under evaluation shall be connected to the measurement circuit as shown in Figure 4. While the circuit is operating with the anticipated normal load, the external adjustable load resistor is reduced gradually to the point where PLIMIT is being dissipated. The load shall be re-adjusted as needed to maintain PLIMIT for 1 min. If PLIMIT cannot be attained and maintained for 1 min under any load condition, the test shall be discontinued.</u></p>
		<p><i>New clause added;</i></p>
9.6.5		<p>If the test is disrupted by the failure of other circuit components (i.e., capacitor, diode, coil winding, foil trace, etc.) then that test shall be repeated two additional times, with new samples, under the same test condition. Test disruption by opening of the same, or a different, component during these repeated tests is acceptable.</p>
		<p><i>New clause added;</i></p>
9.6.6		<p>If the supply to the circuit under evaluation consists of other than a single resistor, the test described in this Clause shall be repeated under any single component fault conditions within the supply circuit likely to result in greater output power availability. The fault condition shall first be applied, and then the variable resistance load shall be adjusted as needed. A new sample shall be used for each component fault.</p> <p>Note: Components that have been deemed acceptable by a separate investigation must not be faulted. Examples of such components include optical isolators complying with the requirements of the CSA Component Acceptance Notice No. 5A, capacitors evaluated to CAN/CSA-E60384-14, etc.</p> <p>Malfunctioning shall be simulated for components such as stalled motors, diodes, transistors, thyristors, electrolytic capacitors, integrated circuits, optical isolators, or other solid-state devices that have not been determined to be reliable, and that could result in a risk of fire or electric shock.</p>
		<p><i>New clause added;</i></p>
9.6.7		<p>If there is any indication of component overheating during any of the tests described in Clauses 9.6.2 – 9.6.6 (i.e., odour, smoke, discoloration, glowing, cracking, melting, or changes in circuit current through the fault), the test condition shall be repeated as part of the component failure test in Clause 9.5.2.</p>
10	Info	Markings
10.3	Info	Construction-related markings



CLAUSE	VERDICT	COMMENT
		<i>New clause added;</i>
10.3.4		LED controlgear that complies with Test Methods 1, 2, and 3 in Clause 9.3.20 may be marked “dimmable.” The manufacturer may also identify the LED controlgear as “dimmable” in the accompanying documents. When either marking is provided, the accompanying documents shall identify that dimming refers to a solid-state electronic dimming control that is electrically wired in series with the mains supply.
		<i>New clause added;</i>
10.3.5		LED controlgear that complies with Test Methods 1 and 4 in Clause 9.3.20 may be marked “dimmable – use only dimmer model(s) xxx made by xxx” or equivalent. The manufacturer may also include “dimmable — use only dimmer model(s) xxx made by xxx” or equivalent in the accompanying documents.
		<i>New clause added;</i>
10.3.6		LED controlgear with a separate input control circuit for the purposes of dimming may be marked as “dimmable” and provided with accompanying documents that describe the dimming method.
		<i>New annex added;</i>
Annex F		<p>Requirements for LED controlgear incorporating means of protection against overheating (Class P)</p> <p>This Annex applies to LED controlgear with Class P designation and are supplementary to other requirements of this Standard (see standard for details).</p>
<p>CUSTOMERS PLEASE NOTE: This Table and column “Verdict” can be used in determining how your current or future production is or will be in compliance with new/revised requirements.</p>		