



CARICOM REGIONAL STANDARD

ENERGY LABELLING — COMPACT FLUORESCENT LAMPS AND LIGHT EMITTING DIODE LAMPS — REQUIREMENTS

CRS 58:201X

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ISBN XXXX-XXXX-XXX
ICS 27.015, 29.140

AMENDMENTS ISSUED SINCE PUBLICATION

AMENDMENT NO.	DATE OF ISSUE	TYPE OF AMENDMENT	NO. OF TEXT AFFECTED	TEXT OF AMENDMENT

FDCRS 58 - For Voting - 28/09/2018 - 27/10/2018

ATTACHMENT PAGE FOR CRS AMENDMENT SHEETS

FDCRS 58 - For Voting - 28/09/2018 - 27/10/2018

Committee representation

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Foreword

This CARICOM Regional Standard CRS 58:201x, *Energy labelling - Compact fluorescent lamps and light emitting diode lamps - Requirements* has been developed under the authority of the CARICOM Regional Organisation for Standards and Quality (CROSQ). It was approved as a CARICOM Regional Standard by the CARICOM Council for Trade and Economic Development (COTED) at its xx Meeting in MMM YYYY.

The Standard is intended to improve the energy performance for compact fluorescent lamps and light emitting diode lamps. The application of the standard is expected to improve energy efficiency within CARICOM Member States via the availability, selection and usage of more energy efficient lamps. The information given on the energy label provides consumers with information for consideration when making a purchasing decision.

In addition, the requirements of this Standard are expected to drive manufacturers, importers and retailers to provide more energy efficient lamp options to consumers as they compete to offer better value for money. It is envisaged that CARICOM Member States will commit to reference these requirements in legislation in order to accelerate the market place transition to more energy efficient lamps.

This standard is aligned with the CARICOM Energy Policy and its objectives which state, inter alia:

- increase energy efficiency and conservation in all sector...; and
- establishment and enforcement of labelling and standards for the importation of electrical appliances.

The implementation of this Standard within CARICOM Member States is expected to achieve the following:

- increase the usage of energy efficient lamps;
- reduce the electricity consumption of CARICOM households and businesses.

This Standard was drafted in accordance with ISO Directives, Part 2: Rules for the structure and drafting of International Standards.

1 Scope

This standard specifies the relevant test methods and a proposed energy efficiency label design for the following:

- a) Self-ballasted compact fluorescent lamps (CFL) of voltages > 50 V;
- b) Integrated light-emitting diode lamps (LEDi) for stable operations, intended for domestic and similar general lighting purposes, having a:
 - 1) rated power up to 60 W;
 - 2) rated voltage of > 50 V a.c up to 250 V a.c.

This standard does not apply to semi-integrated (LEDsi) and non-integrated (LEDni) light-emitting diode lamps.

2 Normative references

The following documents are referred to in the text in such a way that some or all of the contents constitute requirements 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.

International Electrotechnical Commission

IEC 61000-3-2, *Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*

IEC 62560, *Self-ballasted LED lamps for general lighting services by voltage > 50 V - Safety specifications*

IEC 62612, *Self-ballasted LED lamps for general lighting services with supply voltages > 50 V - Performance requirements*

IEC 60969, *Self-ballasted compact fluorescent lamps for general lighting services - Performance requirements*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

compact fluorescent lamp

CFL

unit which cannot be dismantled without being permanently damaged provided with a lamp cap and incorporating a fluorescent light source and any additional elements necessary for starting and stable operation of the light source

3.2

colour rendering index

CRI

measure of the degree to which the psychophysical colour of an object illuminated by the test illuminant conforms to that of the same object illuminated by the reference illuminant, suitable allowance having been made for the state of chromatic adaptation

3.3

distortion factor

factor indicating the level of harmonic current distortion

**3.4
efficacy**

quotient of the lamp luminous flux by the lamp power consumption

NOTE Efficacy is calculated from the measured luminous flux of the individual lamp divided by the measured initial input power of the same lamp.

**3.5
light-emitting diode
LED**

light-emitting diode light source provided with (a) cap(s) incorporating one or more LED module(s) and possibly including one or more of the following; electrical, optical, mechanical and thermal components, interfaces and controlgear

NOTE LED lamps may be integrated (LEDi) or semi-integrated (LEDsi) or non-integrated (LEDni).

**3.6
lumen maintenance**

luminous flux at a given time in the life of a lamp, divided by the initial luminous flux of the lamp

NOTE Lumen maintenance is expressed as a percentage of the initial luminous flux.

**3.7
power factor**

ratio of the absolute value of the active power to the apparent power

**3.8
rated frequency**

frequency marked on the CFL or LEDi lamp

**3.9
rated life**

<CFL> the length of time during which a complete lamp operates to burn-out

**3.10
rated life**

<LEDi> the length of time during which an LEDi lamp provides at least claimed percentage of the initial luminous flux, under standard conditions

**3.11
rated voltage**

voltage or voltage range marked on the CFL or LEDi lamp

**3.12
rated wattage**

wattage marked by the manufacturer on the CFL or LEDi lamp

**3.13
run-up time**

time required for a lamp to reach a specified percentage of its stable luminous flux, the time being measured from the moment the lamp circuit is energised

**3.14
starting time**

time required for a lamp to develop an electrically stable arc discharge, the time being measured from the moment the lamp circuit is discharged

4 Requirements

4.1 General requirements

CFL and LEDi shall meet the requirements of Table 1.

Table 1 — Performance and safety requirements for CFL and LED

Characteristic requirements	Lamp type	Requirement	Reference standard
Efficacy	LEDi	$\geq 75 \text{ lm/W}$	IEC 62612
	CFL	$P \leq (0,24 \cdot \sqrt{\Phi}) + 0,0103 \cdot \Phi$ where P = Power of lamp, in Watts (W) Φ = Luminous flow of lamp, in lumens (lm)	IEC 60969
Safety	LEDi	All safety specifications in IEC 62560	IEC 62560
	CFL	All safety requirements in IEC 60968	IEC 60968
Colour rendering index (CRI)	LEDi	$R_a \geq 80$	IEC 62612
	CFL	$R_a \geq 80$	IEC 60969
Power factor (PF)	LEDi and CFL	No limit at $P \leq 2\text{W}$ $PF \geq 0.4$ at $2\text{W} < P \leq 5\text{W}$ $PF \geq 0.7$ at $5\text{W} < P \leq 25\text{W}$ $PF \geq 0.9$ at $25\text{W} < P$	IEC 61000-3-2
Harmonic distortion	LEDi and CFL	IEC 61000-3-2	
Lumen maintenance	LEDi	At 6,000h $\geq 86.7\%$ of initial	IEC 62612
	CFL	At 2,000h: $\geq 83\%$; at 6,000h: $\geq 70\%$	IEC 60969
Start time	LEDi	$< 0.5 \text{ sec}$	IEC 62612
	CFL	$< 1.5 \text{ sec}$ if $P < 10\text{W}$; or $< 1.0 \text{ sec}$ if $P \geq 10\text{W}$	IEC 60969
Run-up time	LEDi	N/A	N/A

Characteristic requirements	Lamp type	Requirement	Reference standard
	CFL	$\leq 40s$ to 60% Φ or $\leq 100s$ to 60% Φ for lamps containing amalgam Hg	IEC 60969
Switching cycles	LEDi	\geq lamp lifetime hours / 2	IEC 62612
	CFL	\geq lamp lifetime in hours; $\geq 30,000$ if lamp starting time > 0.3 sec	IEC 60969
Premature failure rate	LEDi	N/A	N/A
	CFL	$\leq 2.0\%$ at 200 hours	IEC 60969
Flicker	LEDi	[To be determined]	
	CFL	N/A	
Rated Life	LEDi	Shall be in accordance with IEC 62612	IEC 62612
	CFL	Shall be in accordance with IEC 60969	IEC 60969

4.2 Label

4.2.1 General requirement

The labelling information shall be legible, indelible and printed in the official language of the country of sale.

4.2.2 Energy label

4.2.2.1 The energy label shall contain the following elements:

- Rated wattage (watt);
- Efficacy (lumens/watt);
- Light output (lumens); and
- Rated life (hrs).

4.2.2.2 The energy label may contain the following elements:

- Estimated yearly energy use (based on 3 hours/day); and
- Beam angle (for LEDi) (degrees).

4.2.3 Energy label

CFL and LEDi shall contain the following additional labelling requirements, which may be located on the product itself or packaging:

- a) Mark of manufacturer;
- b) Country of origin;
- c) Rated Voltage (volts);
- d) Light colour;
- e) Colour temperature (Kelvin);
- f) CRI (Colour Rendering Index);
- g) Cap type; and
- h) Frequency (hertz).

4.2.4 Language and location

4.2.4.1 The labelling information shall be expressed in the national language of the Member State.

4.2.4.2 The label shall be affixed to or printed on any of the external faces of the individual packaging of the lamps.

4.2.4.3 The label shall not be obscured by anything that is in place, printed, or adhered to the external part of each package of the lamp which prevents or reduces the visibility of the label.

4.2.5 Permanence

The label shall remain on the packaging, at least, until the product has been purchased by the final consumer.