CONSTRUCTION INDUSTRY COUNCIL
建造業議會

CONSTRUCTION INDUSTRY COUNCIL

CIC GREEN PRODUCT CERTIFICATION

Assessment Standard

LED Lighting

CIC GREEN
PRODUCT CERTIFICATION

(Version 2.0)

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LED LIGHTING

Summary of Assessment Criteria

CORE CRITERIA

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<tr><th></th><th></th><th></th><th>Basic</th><th>+Bonus</th><th></th></tr>
<tr><td>Product Information</td><td>Provide following information with delivered products or made accessible to public:
• Country of origin
• Basic product specifications
• Installation method
• Instructions for consumer product disposal
• Operation & Maintenance Manual</td><td>Documentation including but not limited to product catalogue, technical datasheet, webpages</td><td>5</td><td>-</td><td>4.1.1</td></tr>
<tr><td colspan="6">PERFORMANCE</td></tr>
<tr><td rowspan="2">Efficiency Metrics</td><td>Luminous Efficacy:
Requirements of luminous efficacy:
<table><tr><th rowspan="2">Points</th><th colspan="2">Luminous efficacy (lm/W)</th></tr><tr><th>Directional LED</th><th>Non-directional LED</th></tr><tr><td>10 Basic</td><td>≥ 40</td><td>≥ 50</td></tr><tr><td>10 Basic + 5 Bonus</td><td>≥ 65</td><td>≥ 80</td></tr><tr><td>10 Basic + 10 Bonus</td><td>≥ 80</td><td>≥ 90</td></tr><tr><td>10 Basic + 15 Bonus</td><td>≥ 100</td><td>≥ 105</td></tr></table></td><td>Laboratory test report(s)</td><td>10</td><td>+5 / +10 / +15</td><td>4.5.1.2</td></tr>
<tr><td>Power Factor:
Meet the minimum allowable power factor for LED lamp / luminaire:
<table><tr><th>Rated lamp wattage</th><th>Minimum allowable power factor</th></tr><tr><td>≤ 5 W</td><td>0.45</td></tr><tr><td>> 5 W and ≤ 25W</td><td>0.65</td></tr><tr><td>> 25 W</td><td>0.90</td></tr></table></td><td>Laboratory test report(s)</td><td>10</td><td>-</td><td>4.5.1.3</td></tr>
<tr><td>Lighting Quality</td><td>Correlated Colour Temperature:
Prrouct shall fulfil the correlated colour temperature as shown in Table 4.</td><td>Laboratory test report(s)</td><td>10</td><td>-</td><td>4.5.2.1</td></tr>
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<table>
<tr><th rowspan="2">Criteria</th><th rowspan="2">Requirements</th><th rowspan="2">Verification</th><th colspan="2">Points</th><th rowspan="2">Index</th></tr>
<tr><th>Basic</th><th>+Bonus</th></tr>
<tr><td></td><td>Colour Rendering Index (CRI):
Fulfil the minimum requirement on the measured initial CRI:

<table><tr><th>Points</th><th>CRI</th></tr><tr><td>5 Basic</td><td>≥ 80</td></tr><tr><td>5 Basic + 5 Bonus</td><td>≥ 90</td></tr></table>
And

The measured CRI value shall not lower than 3 from the rated General CRI value declared by the applicant in the product specifications.</td><td>Laboratory test report(s)</td><td>5</td><td>+5</td><td>4.5.2.2</td></tr>
<tr><td rowspan="3">Product Life</td><td>Lifespan for LED Lamp:
LEDs shall deliver required life span for different LED Lamp Types, as listed Table 6.</td><td rowspan="3">Laboratory test report(s) and guarantee certificate(s) supplied with the product or made available to the public</td><td>10</td><td>+5 / +10</td><td>4.5.3.1</td></tr>
<tr><td>Lifespan for Switch:
Shall withstand ≥ 10,000 on/off cycle.</td><td>-</td><td>+5</td><td>4.5.3.2</td></tr>
<tr><td>Warranty:
Provide warranty for at least a year from the date of purchase</td><td>-</td><td>+5</td><td>4.5.3.3</td></tr>
<tr><td></td><td></td><td>Subtotal:</td><td>50</td><td>+40</td><td></td></tr>
</table>

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NON-CORE CRITERIA

Criteria	Requirements	Verification	Points +Bonus	Index
CARBON				
CFP quantification/ EPD Report	Provide a life cycle assessment report with the carbon footprint of products (CFP), covering at least A1 to A3 endorsed by a third-party critical review OR provide an Environmental Product Declaration.	CFP quantification report **OR** Environmental Product Declaration (EPD)	+5	4.2.1
RESOURCE				
Circularity	Recyclability: Developed a recycling plan for the product and declared options for reuse, recycling, recovery and disposal. The plan shall include the following and made available to public.	Recycling plan	+5	4.3.1.1
	Packaging Requirement: The packaging materials shall not contain halogenated plastics; OR Shall be comprised of 100% recycled materials, readily recyclable materials or decomposable materials; OR Shall not be impregnated, labelled, coated or otherwise treated in a manner, which would prevent or significantly limit recycling.	Documentation on packaging materials used	+5	4.3.1.2
Waste Management	Waste Management Plan: Implement effective waste management plan detailing the policies, procedures and/or a waste management program covering manufacturing operations.	Waste management programme	+5	4.3.2.1
Water Management	Option A: Water Consumption Reporting: Report both potable and non-potable water usage in the production process of the past year.	Water consumption report	+5/ +10	
	Water Recycling Program: Develop and implement water recycling program during the manufacturing process.	Documentation on water recycling		

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Criteria	Requirements	Verification	Points +Bonus	Index
	Option B: Water Management System: Process valid certificate under ISO 14046: Water Footprint Assessment	ISO 14046 Certificate issued by accredited certification body		
Energy Management	Option A: Energy Management Plan: Implement effective energy management policies and procedures and/or an energy management programme.	Energy management plan	+5/ +10	
	Option B: Energy Management System: Possess valid certificate under ISO 50001: Energy management systems.	ISO 50001 Certificate issued by accredited certification body		
ENVIRONMENT				
Environmental Management	Environmental Management System: Manufacturer shall possess valid certification of ISO 14001: Environmental management systems or EU Eco-Management and Audit Scheme (EMAS).	ISO 14001 or EMAS Certificate issued by accredited certification body	+5	4.4.1.1
Regional Product	Regional Manufactured Equipment: The manufacturing location should be located within an 800km radius of HKSAR by road transportation; within a 1,600km radius by rail transportation; or within a 4,000km radius by sea transportation.	Location map	+5	4.4.2.1
Human Toxicity and Ecosystem Impact	Hazardous Substances: The listed substances shall be less than 0.1% (by weight of the product) present in the final product: • Lead, mercury and hexavalent chromium: • Polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) • Bis(2-Ethylhexyl) phthalate (DEHP) • Benzyl butyl phthalate (BBP) • Dibutyl phthalate (DBP) • Diisobutyl phthalate (DIBP) AND Cadmium (Cd) shall be less than 0.01% (by weight of the product) present in the final product	Laboratory test report(s) or self-declaration letter	+5	4.4.3.1

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Criteria	Requirements	Verification	Points +Bonus	Index
PERFORMANCE				
Efficiency Metrics	Energy Efficiency: LED lamp should achieve Grade 2 or above under MEELS from EMSD OR Comply with international power consumption standards.	Laboratory test report(s) and guarantee certificate(s).	+5	4.5.1.1
INNOSMART				
Innovations & Additions	Incorporating various smart technologies to improve efficiency, reduce energy consumption, and optimize performance	Narrative with supporting	+5	4.6.1
		Subtotal:	+65	

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1. INTRODUCTION

1.1 PURPOSE

The CIC Green Product Certification Scheme (the "Scheme") is a green product labelling scheme, owned by the Construction Industry Council (CIC) and implemented by the Hong Kong Green Building Council (HKGBC). The primary goal of the scheme is to support Hong Kong's transition to a low-carbon economy by encouraging the adoption of environmentally friendly construction practices.

With the Green Product Certification, various stakeholders, including consumers, building professionals, construction practitioners and policymakers, can easily and unequivocally identify environmentally preferable construction materials and building products. This certification serves as a reliable indicator of a product's sustainability, helping to drive market demand for greener options.

To ensure the credibility and effectiveness of the certification, the CIC and the HKGBC has jointly developed this Technical Assessment Standards (the "Standard"), which sets out the assessment criteria and their benchmarks to govern the application and award of a label under the Scheme. The comprehensive assessment evaluates the overall sustainability of construction materials and building products across multiple dimensions. These dimensions include environmental impact, resource efficiency, technical performance, and the use of smart manufacturing technologies.

The Standard is divided into two main parts:

- General Requirements (Refer to General Requirements provided in separate document). This part introduces Scheme's framework, outlines the application procedure, and details the grades.
- Technical Requirements (This document refers). This part defines the principles, requirements and guides for quantifying and reporting the products' carbon footprint (CFP), along with other sustainability assessment criteria and scoring standards.

This Standard neither modifies nor supersedes laws and regulations. Compliance with this Standard is not a substitute for, and does not assure, compliance with any applicable laws or regulations. Compliance with all applicable laws and regulations is a prerequisite for the manufacturing and marketing of the product.

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1.2 BACKGROUND

With the dramatic improvement in the performance and significant cost reduction of light emitting diodes (LEDs), they are increasingly accepted by users as an alternative to traditional light sources in a variety of lighting applications. LEDs are energy efficient and mercury-free lighting, but like other electronic products, they could have some negative environmental impacts.

The purposes of the assessment criteria developed for LED lighting are, therefore, to minimise the use and subsequent release of environmentally harmful substances to the environmental throughout the product's life cycle, to conserve energy consumption, and to encourage recycling and responsible disposal.

2. SCOPE

The scope of this Standard is applicable to both directional and non-directional LEDs used for general illumination purposes in all types of building. However, LED lamps producing tinted or coloured light as well as organic LED (OLED) lamps are excluded from this Standard.

Note:

ONE application is only eligible for **ONE** product series. All the related products have to be listed on the submitted documents. Each application should specify the product code / serial number.

3. DEFINITIONS

Applicant:	Organisations which apply for the label of the CIC Green Product Certification of the Construction Industry Council
ANSI:	American National Standards Institute
CIC:	Construction Industry Council
CNAS:	China National Accreditation Service for Conformity Assessment
Colour rendering index (CRI):	An index which is defined in terms of a comparison of the spectral tri-stimulus values of the objects under test illumination and standard illumination
Directional lamp:	A lamp having at least 80% of light output within a solid angle of π sr (corresponding to a cone with angle of 120 degree)
Non-directional lamp:	A lamp having less than 80% of light output within a solid angle of π sr (corresponding to a cone with angle of 120 degree)
HKAS:	Hong Kong Accreditation Service
HKGBC:	The Hong Kong Green Building Council Limited

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HOKLAS:	The Hong Kong Laboratory Accreditation Scheme
ISO:	International Organization for Standardization
LED:	A P-N junction semiconductor device that emits incoherent optical radiation when biased in the forward direction. The output is a function of its physical construction, materials used, and exciting current and may be in the ultraviolet, visible or infrared regions of the spectrum
Non self-ballasted LED Lamp:	LED lamp which needs a separate controlgear (ballast) to operate
Self-ballasted LED Lamp:	LED lamp, incorporating controlgear (ballast), and any additional elements necessary for stable operation of the light source, designed for direct connection to the supply voltage
LED Luminaire:	Luminaire designed to incorporate one or more LED light source(s) and any additional elements necessary for starting and stable operation of the light source
Lumen maintenance:	Luminous flux at a given time in the life of the LED expressed as a percentage of the initial luminous flux
Luminous efficacy:	A ratio of luminous flux emitted by a lamp to the electrical power consumed by the lamp (in watts, W)
MEELS:	Mandatory Energy Efficiency Labelling Scheme. Energy labels are required to be shown on the prescribed products for supply in Hong Kong to inform consumers of their energy efficiency performance
MSDS:	Material safety data sheet. To qualify as suitable, MSDS and information therein must not be more than 5-years old
Power factor (PF):	A ratio between the real power and apparent power
PAS:	Publicly Available Specifications
VEELS:	The Hong Kong Voluntary Energy Efficiency Labelling Scheme
Third-party:	An entity without any financial interest or stake in the sales of the product or service being evaluated or other conflict of interest

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4. EVALUATION CRITERIA

A product to be assessed shall meet all the minimum requirements of the "Core Criteria" in order to be awarded a "Green" (i.e. a "pass" grade) Label under the Scheme. Bonus points may be awarded if the product meets the "Non-core Criteria" and a "Bronze", "Silver", "Gold" or "Platinum" Label will be awarded according to the total points accumulated, as shown in Table 1.

Table 1 Benchmarks for grading

Points achieved	Grade to be awarded
90 or above	Platinum
80 – 89	Gold
70 – 79	Silver
60 – 69	Bronze
50 – 59	Green
Below 50	No label

All submissions and documentations shall be endorsed by the Chief Executive Officer or other authorised persons of the Applicant to demonstrate conformance to the assessment criteria. All certification, laboratory report and documentation must be valid during the assessment process and labelling period. The validity of all laboratory report and documentation shall be within 5 years from the date of issue. The chemical tests should be conducted by either a third party or the manufacturer, providing that they have obtained ISO 17025 certification or relevant national accreditations, such as HOKLAS or CNAS.

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4.1 Basic Information

4.1.1 Product Information – Core Criteria

The Applicant is required to achieve 5 Basic Points under this section.

Requirements

5 Basic Points for providing the following product information on the packaging of the product and/ or company website:

- Country of origin
- Basic product specifications
- Installation method
- Instructions for consumer product disposal
- Operation & Maintenance Manual

Verification

Documentation showing the product information and instructions, including but not limited to product catalogue, technical datasheet, webpages and/or any other information freely accessible by customers.

4.2 CARBON

4.2.1 CFP quantification/ EPD Report - Non-core Criteria

The Applicant can achieve maximum 5 Bonus Points under this section.

Requirements

5 Bonus Points for providing life cycle assessment report for quantifying and reporting the carbon footprint of products (CFP), covering at least A1 (raw material supply), A2 (transport) and A3 (manufacturing process). This can be achieved by either of the following:

Conduct CFP study report in accordance with ISO 14067:2018, and CIBSE TM 65 or equivalent

OR

Provide the product's CFP value from a product level EPD issued in accordance with ISO 14067:2018, ISO 21930:2017, GB/T 24067-2024 or BS EN 15804:2012+A2:2019.

Verification

CFP quantification report endorsed by a third-party critical review or Environmental Product Declaration fulfilling the above requirements

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4.3 RESOURCE

4.3.1 Circularity

The Applicant can achieve maximum 10 Bonus Points under this section.

4.3.1.1 Recyclability – Non-core Criteria

Requirements

5 Bonus Points for demonstrating that the manufacturer has developed a recycling plan for the product and declared options for reuse, recycling, recovery and disposal. The plan shall include the following and made available to public.

- Designate all homogeneous materials in the product as being intended for technical and/or biological cycles and define the intended cycling pathway(s) for each material.
- Identify potential partners for product reuse, recycling, recovery in accordance with the intended cycling pathway(s).
- For products and materials intended for municipal recycling, the product and/or material must be compatible for municipal cycling systems (e.g., painted plastics and plastic laminated paper are not currently compatible for municipal recycling).
- Instructions for how to cycle the product shall be made publicly available.

Verification

Documentation of recycling plan, including, but not limited to product catalogue, MSDS and written declaration.

4.3.1.2 Packaging Requirement – Non-core Criteria

Requirements

5 Bonus Points for minimizing the wastage from all primary packaging materials. The packaging materials shall achieve either of the followings.

The packaging materials shall not contain halogenated plastics

OR

The packaging materials shall be comprised of 100% recycled materials, readily recyclable materials or decomposable materials

OR

The packaging shall not be impregnated, labelled, coated or otherwise treated in a manner, which would prevent or significantly limit recycling.

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Verification

Documentation describing the packaging materials used as well as their chemical composition (if any and where applicable), treatment process and recyclability.

4.3.2 Waste Management

The Applicant can achieve maximum 5 Bonus Points under this section.

4.3.2.1 Waste Management Plan – Non-core Criteria

Requirements

5 Bonus Points for implementing effective waste management plan detailing the policies, procedures and/or a waste management program covering manufacturing operations. The waste management plan should include but not limited to the following information:

- Initiatives taken to reduce waste generation and improve recovery/recycling of waste
- Initiatives implemented for recovery of post-consumer and/or pre-consumer waste that can be re-introduced into the manufacturing process and
- Other environmental benefits or constraints associated with waste minimisation objectives and processes.

Verification

Documentation of waste management programme.

4.3.3 Water Management

The Applicant can achieve maximum 10 Bonus Points under this section.

The Applicants can select one of the options below and comply with any or all the requirements under that option to achieve associated points. Each option is eligible for a maximum 10 Bonus Points.

Option A:

4.3.3.1 Water Consumption Reporting – Non-core Criteria

Requirements

5 Bonus Points for reporting both potable and non-potable water usage in the production process of the past year.

Verification

Water consumption report, support by water usage data acquired from water meter, water sub-meter, water bill or other equivalent documents.

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4.3.3.2 Water Recycling Program – Non-core Criteria

Requirements

5 Bonus Points for developing and implementing water recycling program during the manufacturing process.

Verification

Documentation demonstrating the implementation of water recycling program, support by drawings, water usage data acquired from water sub-meter or other equivalent documents.

Option B:

4.3.3.3 Water Management System – Non-core Criteria

Requirements

10 Bonus Points for possessing valid certificate under ISO 14046: Environmental management – Water footprint – Principles, requirements and guidelines.

ISO 14046 is a framework for assessing the water footprint of products, processes, and organizations. It provides principles, requirements, and guidelines for conducting and reporting water footprint assessments. It helps organizations evaluate and improve their water management practices.

Verification

A valid ISO 14046 certificate issued by accredited certification body.

4.3.4 Energy Management

The Applicant can achieve maximum 10 Bonus Points under this section.

The Applicants can select one of the options below and comply with any or all the requirements under that option to achieve associated points.

Option A:

4.3.4.1 Energy Management Plan – Non-core Criteria

Requirements

5 Bonus Points for implementing effective energy management policies and procedures and/or an energy management programme, including but not limited to the following items:

- Energy efficiency initiatives: Manufacturer should undertake specific initiatives to reduce energy use and improve energy efficiency throughout their operations. This could include upgrading to more efficient equipment, optimizing production processes, or implementing energy-saving technologies

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- Supplier requirements: Manufacturers should extend their energy management efforts to their supply chain by establishing requirements or initiatives for suppliers and contract manufacturers to improve their energy performance where possible

Verification

Documentation of energy management plan detailing the above, supported by organizational policy or other equivalent documents.

Option B:

4.3.4.2 Energy Management System – Non-core Criteria

Requirements

10 Bonus Points for possessing valid certificates under ISO 50001: Energy management systems — Requirements with guidance for use.

ISO 50001 provides a framework for organizations to establish, implement, maintain, and improve an Energy Management System. The goal is to help organizations improve their energy performance, increase energy efficiency, and reduce energy costs and greenhouse gas emissions. By achieving ISO 50001 certification, manufacturers can demonstrate their commitment to energy efficiency and sustainability

Verification

A valid ISO 50001 certificate issued by accredited certification body.

4.4 ENVIRONMENT

4.4.1 Environmental Management

The Applicant can achieve maximum 5 Bonus Points under this section.

4.4.1.1 Environmental Management System – Non-core Criteria

Requirements

5 Bonus Points for possessing valid certificate under ISO 14001: Environmental management systems — Requirements with guidance for use or EU Eco-Management and Audit Scheme (EMAS).

The target of the environmental management system shall be set to reduce the environmental impacts during the manufacturing process which include but not limited to the reduction of hazardous substance emissions, energy consumption, CO_2 emissions, secondary environmental load, waste management, water management, etc.

ISO 14001 is the international standard which provides an outline of how to meet the environmental policy and objectives for the business of the applicant.

Eco-Management and Audit Scheme (EMAS) is an environmental management tool which enables organisations to assess, manage and continuously improve their environmental performance.

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Verification

A valid ISO 14001 or EMAS certificate issued by accredited certification body

4.4.2 Regional Product

The Applicant can achieve maximum 5 Bonus Points under this section.

4.4.2.1 Regional Manufactured Equipment – Non-core Criteria

Requirements

5 Bonus Points for products that are manufactured within 800km radius of HKSAR by road transportation; within a 1,600km radius by rail transportation; or within a 4,000km radius by sea transportation. The distance is measured by the direct distance, not by actual travel distance.

Verification

Documents demonstrating the location of the manufacturer and a map showing the distance between the manufacturer and HKSAR.

4.4.3 Human Toxicity and Ecosystem Impact

The Applicant can achieve maximum 5 Bonus Points under this section.

4.4.3.1 Hazardous Substances – Non-core Criteria

Requirements

5 Bonus Points for complying with the maximum allowed levels of restricted substances of product components:

The listed substances shall be less than 0.1% (by weight of the product) present in the final product:

- Lead, mercury and hexavalent chromium:
- Polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE)
- Bis(2-Ethylhexyl) phthalate (DEHP)
- Benzyl butyl phthalate (BBP)
- Dibutyl phthalate (DBP)
- Diisobutyl phthalate (DIBP)

Cadmium (Cd) shall be less than 0.01% (by weight of the product) present in the final product.

The product shall be manufactured in accordance with the EU Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment EU 2015/863 (commonly referred to as the Restriction of Hazardous Substances Directive or RoHS).

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Verification

Laboratory test report(s) or self-declaration letter. Test report(s) shall be compiled according to the National and International test methods including but not limited to IEC 62321.

4.5 PERPORMANCE

4.5.1 Efficiency Metrics

The Applicant is required to achieve 20 Basic Points under this section. Additionally, the Applicant can achieve maximum 20 Bonus Points under this section.

4.5.1.1 Energy Efficiency – Non-core Criteria

Requirements

5 Bonus Points for obtaining energy efficient label for LED products. The eligible labelling scheme includes:

Grade 2 or above under the Mandatory Energy Efficiency Labelling Scheme (MEELS) from EMSD for LED lamp with a rated voltage of 220V - 240V, operating frequency of 50Hz, wattage up to 60W.

OR

International power consumption standard such as Energy Star.

Verification

Valid certificate from MEELS from EMSD, Energy Star or other equivalent certification

4.5.1.2 Luminous Efficacy – Core Criteria

Requirements

Points are awarded for achieving high luminous efficacy, as listed to Table 2.

Table 2: Requirements of luminous efficacy and associated points

Points	Luminous efficacy (lm/W)	
	Directional LED	**Non-directional LED**
10 Basic	≥ 40	≥ 50
10 Basic + 5 Bonus	≥ 65	≥ 80
10 Basic + 10 Bonus	≥ 80	≥ 90
10 Basic + 15 Bonus	≥ 100	≥ 105

Verification

Laboratory test report(s) on Luminous Efficacy or equivalent tests that meet the requirements outlined in IES LM-79

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4.5.1.3 Power Factor – Core Criteria

Requirements

10 Basic Points are awarded for achieving minimum allowable power factor for LED lighting, as referenced in Table 3.

Table 3: Minimum allowable power factor for LED lighting

Rated lamp wattage	Minimum allowable power factor
≤ 5 W	0.45
> 5 W to ≤ 25W	0.65
> 25 W	0.90

Verification

Laboratory test report(s) on Power Factor or equivalent tests that meet the requirements outlined in IES LM-79.

4.5.2 Lighting Quality

The Applicant is required to achieve 15 Basic Points under this section. Additionally, the Applicant can achieve maximum 5 Bonus Points under this section.

4.5.2.1 Correlated Colour Temperature – Core Criteria

Requirements

10 Basic Points are awarded for products meeting the targeted correlated colour temperature and (CCTs) and Tolerance, listed in Table 4.

The product shall have one of the rated correlated colour temperatures including 2,700K, 3,000K, 3,500K, 4,000K, 4,500K, 5,000K, 5,700K, 6,500K and a flexible CCT consistent with the 7-step chromaticity quadrangles and Duv tolerances as indicated in Table 4. The measured initial CCT and initial Duv shall be within the tolerances of the target CCT and the target Duv of the selected rated CCT.

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Table 4: Rated CCT categories

Rated CCT	Target CCT and tolerance (K)	Target Duv and tolerance
2,700 K	2,725 ± 145	0.000 ± 0.006
3,000 K	3,045 ± 175	0.000 ± 0.006
3,500 K	3,465 ± 245	0.000 ± 0.006
4,000 K	3,985 ± 275	0.001 ± 0.006
4,500 K	4,503 ± 243	0.001 ± 0.006
5,000 K	5,028 ± 283	0.002 ± 0.006
5,700 K	5,665 ± 355	0.002 ± 0.006
6,500 K	6,530 ± 510	0.003 ± 0.006
Flexible CCT (2700 – 6500 K)	T [1)] ± ΔT [2)]	Duv [3)]± 0.006

1) T is chosen to be at 100 K steps (2,800, 2,900, ... , 6,400 K)

2) ΔT is given by $\Delta T = 0.0000108 \times T^2 + 0.0262 \times T + 8$

3) Duv is given by $Duv = 57700 \times (1/T)Verifica^2 - 44.6 \times (1/T) + 0.0085$

Verification

Laboratory test reports on Correlated Colour Temperature or equivalent tests that meet the requirements outlined in IES LM-79.

4.5.2.2 Colour Rendering Index – Core Criteria

Requirements

Points are awarded for products fulfilling the minimum requirements on Colour Rendering Index (CRI), as listed in Table 5.

Table 5: Requirements of Colour Rendering Index and associated points

Points	Measured Initial CRI
5 Basic	≥ 80
5 Basic + 5 Bonus	≥ 90

AND

The measured CRI value shall not lower by 3 from the rated General CRI value declared by the applicant in the product specifications.

Verification

Laboratory test report(s) on Colour Rendering Index or equivalent tests that meet the requirements outlined in IES LM-79

4.5.3 Product Life

The Applicant is required to achieve 10 Basic Points under this section. Additionally, the Applicant can achieve maximum 20 Bonus Points under this section.

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4.5.3.1 Lifespan for LED Lamp – Core Criteria

Requirements

Points are awarded for LED lamp products achieving minimum lifespan measured in the unit of hours, as listed Table 6.

Table 6: Requirements on product lifespan and associated points

Points	Lifespan (Hours) for Different Lamp Type		
	Self-ballasted LED lamp	Non self-ballasted LED lamp	LED luminaire
10 Basic	≥ 15,000	≥ 20,000	≥ 35,000
10 Basic + 5 Bonus	≥ 25,000	≥ 35,000	≥ 45,000
10 Basic + 10 Bonus	≥ 35,000	≥ 50,000	≥ 60,000

Note: The lifespan hour is under the condition that the lamp shall deliver at least 70% of initial lumens.

Verification

Laboratory test report(s) and guarantee certificate(s) supplied with the product or made available to the public.

4.5.3.2 Lifespan for Switch – Non-core Criteria

Requirements

5 Bonus Points for switches withstanding over 10,000 on/off cycles.

Verification

Laboratory test report(s) and guarantee certificate(s) supplied with the product or made available to the public.

4.5.3.3 Warranty – Non-core Criteria

Requirements

5 Bonus Points for product with warranty covering repair or replacement for a minimum of 1 year from the date of purchase.

Verification

Guarantee certificate(s) supplied with the product or made available to the public.

4.6 INNOSMART

4.6.1 Innovations & Additions – Non-core Criteria

The Applicant can achieve maximum 5 Bonus Points under this section.

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Requirements

5 Bonus Points for achieving significant, measurable environmental performance using new practices, technology and strategy not addressed in this Standard.

OR

Incorporating various smart technologies to improve efficiency, reduce energy consumption, and optimize performance as, exemplified by the following examples:

- with Multi-trade Integrated MEP (MiMEP)
- Smart Controls and Automation
- Modular LED Systems
- IoT Sensors

Verification

Report with a maximum length of 1,000 words, outline the objectives, solution and evaluation of the performance achieved by proposed Smart and Innovative Technologies.

AND

Include attachments that provide evidence of implementation, along with relevant technical specification that support the claims made in the report.

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5. SCORING

The points for meeting each criterion stated in this Standard are summarized below.

Table 7: Points to be awarded under the assessment criteria of this Standard

Label	Evaluation criteria		Points		Related Beam Plus Credits
			Basic	+Bonus	
	Product Information		**5**	-	
Carbon	CFP quantification/ EPD Report		-	+5	MW 10
Resource	Circularity	Recyclability	-	+5	
		Packaging Requirement	-	+5	
	Waste Management	Waste Management Plan	-	+5	
	Water Management	Water Consumption Reporting	-	+5/+10	
		Water Recycling Program			
		Water Management System			
	Energy Management	Energy Management Plan	-	+5/+10	
		Energy Management System			
Environment	Environmental Management	Environmental Management System	-	+5	
	Regional Product	Regional Manufactured Equipment	-	+5	MW 8
	Human Toxicity and Ecosystem Impact	Hazardous Substances	-	+5	
Performance	Efficiency Metrics	Energy Efficiency	-	+5	
		Luminous Efficacy [CORE]	**10**	+5/+10/ +15	EU2, EU3
		Power Factor [CORE]	**10**	-	
	Lighting Quality	Correlated Colour Temperature [CORE]	**10**	-	
		Colour Rendering Index [CORE]	**5**	+5	
	Product Life	Lifespan for LED Lamp [CORE]	**10**	+5 / +10	
		Lifespan for Switch	-	+5	
		Warranty	-	+5	
InnoSmart	Innovations & Additions		-	+5	IA
		Total:	**50**	**+105**	

Related BEAM Plus Credits refer to these relevant credits under BEAM Plus New Buildings Version 2.0, as listed below.

- MW 8: Regional Materials
- MW 10: Life Cycle Assessment
- EU 2: Reduction of CO2 Emissions
- EU 3: Peak Electricity Demand Reduction
- MW 9: Use of Green Products
- Innovation & Additions

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