

## **PRODUCT CERTIFICATION TEMPLATE 1**

### **Lanterns for buoys and light-beacons, including lanterns with enclosed rotating optics**

#### **Purpose**

Product templates identify parameters that should be tested and measured and the standards against which each parameter should be tested and measured to enable a comprehensive evaluation of products.

#### **Scope**

The template is applicable for lanterns used on buoys and light beacons and includes lanterns with enclosed rotating optics, powered via external power supplies or via integrated solar power supplies.

#### **Applicable documents, Recommendations and Guidelines**

##### Iala documents

1. IALA Recommendation E-122 (2001) ‘Photometry of Marine Aids to Navigation Signal Lights’
2. IALA Recommendation E-200-1 (2005), Part 1 – Colour
3. IALA Guide To Ambient Light Levels At Which ATON Lights Should Switch On And Off.(No. 1038)
4. IALA Recommendation for the notation of luminous intensity and range of lights. (1966)

##### International Electrotechnical Commission (IEC) documents

1. IEC 61215 Crystalline silicon terrestrial photovoltaic (PV) modules - Design-qualification and type approval
2. IEC 60945 Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results
3. IEC 60068 Environmental testing

##### Japanese International Standards (JIS)

1. JIS C 0028 - Basic environmental testing procedures Part 2: Tests Test Z/AD: Composite temperature/humidity cyclic test
2. JIS C 0911 Vibration test method of small-sized electrical machinery & apparatus

United States Military Standards (MIL-STD)

1. MIL-STD-202G - Test Method Standard, Electronic and Electrical Component Parts.

**Test Standards**

The Templates quote national and/or international standards. If an IALA Product Certification Authority (IALA-PCA) wishes to use an alternative standard, it is the responsibility of the IALA-PCA to confirm that the standard used conforms to the IALA quoted standard. Where no test standard is mentioned the manufacturer shall state the test standard used, preferably with reference to international or national standards.

**Product Certification Template 1 – Lanterns for buoys and light-beacons, including lanterns with enclosed rotating optics**

**Product Type / Manufacturer Name and Reference Number: \_\_\_\_\_**

<b>Para No.</b>	<b>Parameter category</b>	<b>Parameter</b>	<b>Measured Value</b>	<b>Test Method*</b>	<b>Comments</b>
<b>1</b>	<b>Optical</b>				
1.1		Effective luminous intensity	Candela	Photometric measurement IALA Recommendation E-122 (2001)	For LEDs the effective luminous intensity varies depending on duty cycle
1.2		Flash duration and flash shape (LED lights included)		Photometric Measurement IALA Recommendation E-122 (2001)	Time between points of 50% peak intensity. Define stability of rotation for a rotating beacon. For LED define frequency modulation of light, intensity profile of the flash

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\* Where no test standard is mentioned, the manufacturer shall state the test standard used, preferably with reference to international or national standards.

<b>Para No.</b>	<b>Parameter category</b>	<b>Parameter</b>	<b>Measured Value</b>	<b>Test Method*</b>	<b>Comments</b>
1.3		Horizontal beam uniformity (omnidirectional light) or horizontal divergence (range lights and rotating optics)		IALA Recommendation E-122 (2001)	For omnidirectional lights , state maximum variation from the mean intensity over any angle in the horizontal plane. For range lights and rotating optics for the horizontal beam, state the horizontal divergences at 50% of peak intensity. The manufacturer shall provide a light distribution curve.
1.4		Vertical divergence	Degrees	Photometric Measurement IALA Recommendation E-122 (2001)	From the vertical beam, state the vertical divergences at 50% of peak intensity as referenced in IALA Recommendation E-122 (2001)
1.5		Signal colour		IALA Recommendation E-122	Colour boundaries and colour shift (for LED, variation with duty cycle) in the regions as defined in IALA Recommendation E-200-1, Part 1 – Colour The manufacturer shall provide the measured coordinates on a chromaticity diagram.

Para No.	Parameter category	Parameter	Measured Value	Test Method*	Comments
1.6		Nominal range	Nautical Miles		The nominal range is derived from the effective intensity (see 1.1.) in accordance with the applicable IALA recommendations listed below: IALA Recommendation for the notation of luminous intensity and range of lights. (1966) IALA Recommendation for a definition of the Nominal Daytime Range of Maritime Signal Lights Intended for the Guidance of shipping by day (1974) State applicable atmospheric transmission factor
2	Electrical – externally sourced	Power supply normal and extreme voltage	Volts	IEC 60945 section 7	State design voltage range
2.1		Power consumption	Watts		For flashed light sources quiescent and ‘lamp on’ power should be quoted. Power consumption for each available flash character and in the case of LED lanterns each available power level should be made available upon request.
2.2		Reverse polarity circuit protection		IEC 60945 section 7.2	Indicate protection method.

Para No.	Parameter category	Parameter	Measured Value	Test Method*	Comments
2.3		Power supply and control and monitoring terminations/connectors			Indicate connector and/or terminal type
<b>3</b>	<b>Control</b>				
3.1		Daylight control	Lux		Lux level and switching range, reference to IALA GuideN°. 1038 Indicate the hysteretic level and time delay.
3.2		Monitoring			State parameters that can be monitored
3.3		Programming			State parameters that can be programmed and method of programming
3.4		Light source voltage regulation		As defined by manufacturer	State the accuracy of voltage regulation to light source in % and indicate the method of testing
<b>4</b>	<b>Physical</b>				
4.1		Maximum Height	mm		State the dimension
4.2		Maximum Diameter	mm		State the dimension
4.3		Maximum Weight	kg		State the weight
4.4		Focal Height	mm		Measure from base to focal plane
4.5		Materials of construction			State the material for the lantern, lens, and glazing.
4.6		Ingress Protection ( water resistance )			Define applicable IP number to EN60529

Para No.	Parameter category	Parameter	Measured Value	Test Method*	Comments
4.7		Description of lantern mounting hole pattern			Diameter and spacing of holes for fixing bolts
<b>5</b>	<b>Environmental</b>				
5.1		Temperature – operational and storage		Manufacturer to state the test standard	State the operational and storage temperature range. Manufacturer to submit the test results and the method of testing
5.2		Humidity – operational and storage		IEC 60945 section 8.3; IEC 60068-2-3 JIS C 0028; MIL-STD-202G-103B	State the operational and storage humidity range. Manufacturer to submit the test results and the method of testing
5.3		Salt air and sea water spray		MIL-STD-202G-101E	Manufacturer to submit the test results and the method of testing
5.4		Shock and vibration		JIS C 0911; MIL-STD-202G-201A/202D	Manufacturer to submit the test results and the method of testing
5.5		Electromagnetic interference		IEC 60945 sections 9 & 10	Manufacturer to submit the test results and the method of testing
<b>6</b>	<b>Service</b>				

<b>Para No.</b>	<b>Parameter category</b>	<b>Parameter</b>	<b>Measured Value</b>	<b>Test Method*</b>	<b>Comments</b>
6.1		Designed Service life.	Years		State if any components are designed to be replaced or serviced during the service life of the lantern Indicate UV stability of lens and glazing (if applicable)
6.2		Maintenance intervals	Hours		State the maintenance interval for each replaceable component
6.3					
<b>7</b>	<b>Disposal and recycling</b>				
<b>7.1</b>		Recycling			Indicate whether the product is recyclable. State whether the manufacturer will undertake the recycling of the product Reference: IALA guideline 1036
<b>7.2</b>		Disposal			State any material content that would harm the environment, if the product is disposed of as normal waste Reference: IALA guideline 1036
<b>8</b>	<b>Safety</b>				
<b>8.1</b>		Worker safety			Manufacturer to state any special requirement to ensure workers' safety in the use of the product