Guideline No.: E-08(201705)

E-08 LUMINAIRES

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Foreword:

This Guide is a part of CCS Rules, which contains technical requirements, inspection and testing criteria related to classification and statutory survey of marine products.

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1. According to the IEC standard version update, the version of the standards and the corresponding provisions have been adjusted.

CONTENTS

LUMINAIRES

1 General provisions

1.1 Application

This Chapter applies to non-explosion-proof luminaires (excluding luminaires for emergency lighting) with operating voltage not exceeding 1000 V, installed and used on ships and offshore installations.

1.2 Normative references

1.2.1 The following standards, rules and guidelines are the basis for approval and inspection of marine luminaires by CCS.

1.2.2 The paragraphs of the following standards, rules and guidelines referred to in this Chapter are to be deemed as part of this Chapter. Where such documents are dated, any subsequent amendments (excluding corrections) or revisions do not apply to this Chapter. However, users of this Chapter are encouraged to study the use of latest versions of these standards, rules and guidelines.

(1) IEC 60598-1:2014 Luminaires – Part 1: General requirements and tests

(2) IEC 60598-2-1:1979 Luminaires – Part 2: Particular requirements. Section One: Fixed general purpose luminaires

(3) IEC 60598-2-2:2011 Luminaires – Part 2-2: Particular requirements Recessed luminaires

(4) IEC 60598-2-4:1997 Luminaires – Part 2: Particular requirements - Section 2: Portable general purpose luminaires

(5) IEC 60598-2-5:2015 Luminaires – Part 2-5: Particular requirements - Floodlights

(6) IEC 60598-2-8:2013 Luminaires – Part 2-8: Particular requirements - Handlamps

(7) IEC 60598-2-22:2014 Luminaires – Part 2-22: Particular requirements - Luminaires for emergency lighting

(8) IEC 61347-2-3:2011+AMD1:2016 CSV Lamp control gear – Part 2-3: Particular requirements for a.c. and /or d.c.supplied electroniccontrol gear for fluorescent lamps

(9) IEC 61347-2-8:2006 Lamp control gear – Part 2-8: Particular requirements for ballasts for fluorescent lamps

(10) IEC 61347-2-9:2012 Lamp control gear – Part 2-9: Particular requirements for electromagnetic control gear for discharge lamps (excluding fluorescent lamps)

(11) IEC 61347-2-1:2000+A1:2005+A2:2013 Lamp control gear – Part 2-1: Particular requirements for starting devices (other than glow starters)

(12) IEC 60155:1993 Glow-starters for fluorescent lamps

(13) IEC 60238:2004 Edison screw lampholders

(14) IEC 60092-306:2009 Electrical installations in ships – Parts 306: Equipment-Luminaires and lighting accessories

(15) IEC 61184:2008+A1:2011 Bayonet lampholders

(16) CCS Rules for Classification of Sea-going Steel Ships, and its amendments;

(17) CCS GD22-2015Guideline on Type Approval Test of Electrical and Electronic Products (Current valid version)

1.3 Terms and definitions

1.3.1 Rules for Classification of Sea-Going Steel Ships, It means the CCS Rules for Classification of Sea-Going Steel Ships. For definitions of terms such as products inspection, approval, type test, sample and unit/batch inspection, see 3.1.2 of Chapter 3, PART ONE of CCS Rules for Classification of Sea-going Steel Ships.

1.3.2 Creepage distance means the shortest path between two conductive parts along the surface of insulating material.

1.3.3 Clearance means the shortest distance through air between two conductive parts.

1.3.4 Floodlighting means lighting projected to the whole site or lighted objects, giving much more illumination than the surrounding illumination.

1.3.5 Floodlights mean luminaires used for floodlighting.

1.3.6 Fixed luminaires mean luminaires which are not easy to move from one place to another.

1.3.7 Portable luminaires mean luminaires which can be moved from one place to another in normal operation after connecting to power source.

1.3.8 Handlamp means a portable luminaire with one handle and one flexible cable or cord.

1.3.9 Ballast means one component comprised of inductance, capacitance or resistance individually or jointly, between power source and one or more discharge lamps. Mainly used for restricting the lamp current within required limit.

1.3.10 AC supplied electronic ballast is powered by network source, comprised of AC-AC inverter of steady-state components, which usually start one or more tubular fluorescent lamps under high frequency.

1.3.11 Starting device means the device that provides appropriate electrical conditions to start discharge lamps by its own action or in combination with other components in line.

1.3.12 Glow-starter for fluorescent lamp means the starter that starts the fluorescent lamp by glow discharge.

2 Plans and documents

2.1 General requirements for plans and documents to be submitted to CCS for examination and approval are specified as follows:

(1) particulars of the manufacturer, including the name, address, history, production capacity, technical and inspection personnel, main products, subordinate relationship, trademark, etc.;

(2) details of the products for approval;

(3) main production equipment;

(4) main test equipment;

(5) brief production technology of the products for approval;

(6) quality management documents;

(7) document of entering to the register of enterprise;

(8) qualification certificate and/or production license;

(9) specimen of products quality certificate;

(10) quality control scheme (where applicable).

2.2 When applying for approval by CCS, the following plans and documents are to be submitted.

2.2.1 The following Plans and documents are to be submitted to CCS for approval:

(1) General plan of luminaires and detailed drawings of main parts;

(2) Technical specifications of luminaires;

(3) Type test programme.

2.2.2 The following plans and documents are to be submitted to CCS for information:

(1) Particulars of the manufacturer (including history and current situation) and description of main manufacturing equipment and test equipment;

(2) Documents of the manufacturer's technical management and quality management systems, such as product quality management system (including management of raw materials, semi-products and finished products), test equipment management system and general introduction of testing and inspection personnel;

(3) Documents of manufacturing processes;

(4) Specifications of associated electrical products;

(5) Operation instructions for the products.

3 Design and technical requirements

3.1 General technical requirements for luminaires are given in Table 3.1.

General Technical Requirements **Table 3.1**

No.	Item	Technical requirements
1.	Marking	IEC 60598-1:2014 Chapter 3
2.	Construction	IEC 60598-1:2014 Chapter 4

Continued Table 3.1

3.	External and internal wirings	IEC 60598-1:2014Chapter 5
4.	Earthing	IEC 60598-1:2014 Chapter 7
5.	Protection against electric shock	IEC 60598-1:2014 Chapter 8
6.	Dust proof, solid object proof and humidity proof	IEC 60598-1:2014 Chapter 9 1.3.2, PART FOUR of CCS Rules for Classification of Sea-going Steel Ships
7.	Insulation resistance and electrical strength, touch current and protective conductor current	IEC 60598-1:2014 Chapter 10
8.	Creepage distance and clearances	IEC 60598-1:2014 Chapter 11
9.	Endurance test and thermal test	IEC 60598-1:2014 Chapter 12
10.	Resistance to heat, fire and tracking	IEC 60598-1:2014 Chapter 13
11.	Screw terminals	IEC 60598-1:2014 Chapter 14
12.	Screwless terminals and electrical connectors	IEC 60598-1:2014 Chapter 15

3.2 Marine technical requirements for luminaires are given in Table 3.2.

Marine Technical Requirements **Table 3.2**

No.	Item	Technical requirements
1.	Power supply variation	1.2.2, PART FOUR of CCS Rules for Classification of Sea-going Steel Ships
2.	Resistance to vibration	Mechanical and electrical connectors or fittings are to be connected tight and certain measures are to be taken to avoid any loosening caused by shock
3.	Ambient temperature	1.2.1, PART FOUR of CCS Rules for Classification of Sea-going Steel Ships
4.	Moisture proof	Without any permanent or temporary breakdown or damage under moisture and heat

Continued Table 3.2

5.	Corrosion resistance (for luminaires installed on open deck only)	Metal components of luminaires are to be corrosion-resistant
6.	Flame retardant	Plastic components of luminaires have flame-retardant and self-quenching characteristics at specified flame
7.	External and internal wirings	Conducting wires used in luminaires are to be shipboard wires of an appropriate specification, of which the nominal section is not to be less than 0.75 mm2 and voltage rating not less than 250 V. Enclosures of fixed luminaires are to have at least 2 power cable access holes. For emergency luminaires, 2 additional power cable access holes are needed
8.	Conducted emissions (for discharge lamps only)	*Guideline on Type Approval Test of Electrical and Electronic Products*(Current valid version), 3.2
9.	Particular requirements for incandescent lamps	Chapter 3, PART FOUR of CCS Rules for Classification of Sea-going Steel Ships
10.	Particular requirements for discharge lamps with operating voltage not exceeding 250 V	Chapter 3, PART FOUR of CCS Rules for Classification of Sea-going Steel Ships
11.	Particular requirements for discharge lamps with operating voltage more than 250 V	Chapter 3, PART FOUR of CCS Rules for Classification of Sea-going Steel Ships
12.	Requirements on luminaires	IEC 60092-306:2009 Chapter 4
13.	Requirements on socket-outlets and plugs for luminaires connection	IEC 60092-306:2009 Chapter 6
14.	Requirements on lighting accessories	IEC 60092-306:2009 Chapter 5
15.	Shock exposure	IEC 60092-306:2009 Section 7.2.2, Chapters 7
16.	Special chemical and physical attributes.	IEC 60092-306:2009 Section 7.2.5, Chapters 7
17.	Coating thickness	IEC 60092-306:2009 Section 7.2.6, Chapters 7

3.3 Floodlights are to comply with the requirements of 3.1 and 3.2 in this Chapter and in addition, the technical requirements listed in Table 3.3.

Technical Requirements for Floodlights **Table 3.3**

No.	Item	Technical requirements
1.	Marking	IEC 60598-2-5:2015 Chapter 5.5
2.	Construction	IEC 60598-2-5:2015 Chapter 5.6
3.	Endurance test and thermal test	IEC 60598-2-5:2015 Chapter 5.12
4.	Dust proof and humidity proof	IEC 60598-2-5:2015 Chapter 5.13

3.4 Fixed general purpose luminaires are to comply with the requirements of 3.1 and 3.2 in this Chapter and in addition, the technical requirements listed in Table 3.4.

Technical Requirements for Fixed General Purpose Luminaires **Table 3.4**

No.	Item	Technical requirements
1.	Endurance test and thermal test	IEC 60598-2-1:1979 Chapter 1.12
2	Dust proof and humidity proof	IEC 60598-2-1:1979 Chapter 1.13

3.5 Portable general purpose luminaires are to comply with the requirements of 3.1 and 3.2 in this Chapter and in addition, the technical requirements listed in Table 3.5.

Technical Requirements for Portable General Purpose Luminaires **Table 3.5**

No.	Item	Technical requirements
1.	Construction	IEC 60598-2-4:1997 Chapter 4.6
2.	External and internal wirings	IEC 60598-2-4:1997 Chapter 4.10
3.	Protection against electric shock	IEC 60598-2-4:1997 Chapter 4.11
4.	Endurance test and thermal test	IEC 60598-2-4:1997 Chapter 4.12
5.	Dust proof and humidity proof	IEC 60598-2-4:1997 Chapter 4.13

1.6 Handlamps are to comply with the requirements of 3.1 and 3.2 in this Chapter and in addition, the technical requirements listed in Table 3.6.

Technical Requirements for Handlamps **Table 3.6**

No.	Item	Technical requirements
1.	Marking	IEC 60598-2-8:2013 Chapter 8.6
2.	Construction	IEC 60598-2-8:2013 Chapter 8.7
3.	Terminals	IEC 60598-2-8:2013 Chapter 8.10
4.	External and internal wirings	IEC 60598-2-8:2013 Chapter 8.11
5.	Protection against electric shock	IEC 60598-2-8:2013 Chapter 8.12
6.	Endurance test and thermal test	IEC 60598-2-8:2013 Chapter 8.13
7.	Dust proof and humidity proof	IEC 60598-2-8:2013 Chapter 8.14
8.	Resistance to heat, fire and tracking	IEC 60598-2-8:2013 Chapter 8.16

3.7 Recessed luminaires are to comply with the requirements of 3.1 and 3.2 in this Chapter and in addition, the technical requirements listed in Table 3.7.

Technical Requirements for Recessed Luminaires **Table 3.7**

No.	Item	Technical requirements
1.	External and internal wirings	IEC 60598-2-2:2011 Chapter 2.11
2.	Protection against electric shock	IEC 60598-2-2:2011 Chapter 2.12
3.	Endurance test and thermal test	IEC 60598-2-2:2011 Chapter 2.13
4.	Dust proof and humidity proof	IEC 60598-2-2:2011 Chapter 2.14

3.8 Technical requirements for essential components of luminaires are given in Table 3.8.

Technical Requirements for Main Components **Table 3.8**

No.	Item	Technical requirements
1.	A.C. and/or d.c. supplied electronic control gearfor fluorescent lamps	IEC 61347-2-3:2011+AMD1:2016 CSV

Continued Table 3.8

2.	Inductance ballast for fluorescent lamps	IEC 61347-2-8:2006
3.	Electromagnetic control gear for discharge lamps (excluding fluorescent lamps)	IEC 61347-2-9:2012
4.	Glow-starters for fluorescent lamps	IEC 60155:1993
5.	Starting devices (excluding glow-starters)	IEC 61347-2-1:2000+A1:2005+A2:2013
6.	Edison screw lampholders	IEC 60238:2004
7.	Bayonet lampholders	IEC 61184:2008+AMD1：2011

4 Selection of typical samples

4.1 Luminaires and main components to be tested are to be selected by CCS Surveyor on site or under his supervision.

4.2 Selection of samples

4.2.1 Luminaires and main components to be tested are to represent or cover, in terms of characteristics, features and manufacturing quality, the products or product series for which approval is sought and are to be manufactured by the required manufacturing methods and means. Three type test samples are to be taken randomly for each type of finished luminaires and main components satisfactorily inspected by the manufacturer.

5 Type test

5.1 Test location

5.1.1 For initial type approval, samples are to be submitted to a verification organization designated or recognized by CCS for type test.

5.1.2 For renewal of the type approval certificate, type test may be carried out at the manufacturer’s laboratory in the presence of CCS Surveyor, subject to agreement of CCS and provided that the manufacturer has required test environment and equipment as well as competent inspection and test personnel.

5.2 Test environment

5.2.1 Unless otherwise specified, all tests are to be carried out under the following atmospheric conditions:

(1) ambient temperature: 15℃ to 35℃;

(2) relative humidity: 30%RH to 90%RH;

(3) air pressure: 86 to 106 kPa.

5.3 Exemption from test items

5.3.1 Any exemption requested by the manufacturer from type test items will be addressed by the related CCS inspection organization, taking into consideration the significance of products, their mature manufacturing procedures and history of use as well as the availability of appropriate test reports issued by any IACS member or verification test organization. If the manufacturer declares that there is no any substantial change in design, construction and materials of the products, of which the type approval certificate is to be renewed, consideration may be given to an appropriate exemption from type test items.

5.4 Type test items

5.4.1 Type test items in respect to general requirements for luminaires are given in Table 5.4.1.

General Type Test Items **Table 5.4.1**

No.	Test item	Technical requirements	Test method
1.	Marking	IEC 60598-1:2014 Chapter 3	IEC 60598-1:2014 Chapter 3
2.	Construction	IEC 60598-1:2014 Chapter 4	IEC 60598-1:2014 Chapter 4
3.	External and internal wirings	IEC 60598-1:2014 Chapter 5	IEC 60598-1:2014 Chapter 5
4.	Earthing	IEC 60598-1:2014 Chapter 7	IEC 60598-1:2014 Chapter 7
5.	Protection against electric shock	IEC 60598-1:2014 Chapter 8	IEC 60598-1:2003 Chapter 8
6.	Dust proof, solid object proof and humidity proof	IEC 60598-1:2014 Chapter 9 1.3.2, PART FOUR of CCS Rules for Classification of Sea-going Steel Ships	IEC 60598-1:2014 Chapter 9

Continued Table 5.4.1

7.	Insulation resistance and electrical strength	IEC 60598-1:2014 Chapter 10	IEC 60598-1:2014 Chapter 10
8.	Creepage distances and clearances	IEC 60598-1:2014 Chapter 11	IEC 60598-1:2014 Chapter 11
9.	Endurance test and thermal test	IEC 60598-1:2014 Chapter 12	IEC 60598-1:2014 Chapter 12
10.	Resistance to heat, fire and tracking	IEC 60598-1:2014 Chapter 13	IEC 60598-1:2014 Chapter 13
11.	Screw terminals	IEC 60598-1:2014 Chapter 14	IEC 60598-1:2014 Chapter 14
12.	Screwless terminals and electrical connectors	IEC 60598-1:2014 Chapter 15	IEC 60598-1:2014 Chapter 15

5.4.2 Type test items in respect to marine requirements for luminaries are given in Table 5.4.2.

Marine Type Test Items **Table 5.4.2**

No.	Test item	Technical requirements	Test method
1.	Power supply variation	1.2.2, PART FOUR of CCS Rules for Classification of Sea-going Steel Ships	*Guideline on Type Approval Test of Electrical and Electronic Products*(Current valid version), 2.4
2.	Vibration endurance	Mechanical and electrical connectors or fittings are to be connected tight and certain measures are to be taken to avoid any loosening caused by shock	*Guideline on Type Approval Test of Electrical and Electronic Products*(Current valid version), 2.7
3.	Ambient temperature	Section 1.2.1, PART FOUR of CCS Rules for Classification of Sea-going Steel Ships	*Guideline on Type Approval Test of Electrical and Electronic Products*(Current valid version). 2.8;2.9
4.	Moisture proof	Without any permanent or temporary breakdown or damage under moisture and heat	*Guideline on Type Approval Test of Electrical and Electronic Products*(Current valid version), 2.10
5.	Corrosion resistance (for luminaires mounted on the open deck only)	Metal components of luminaires are to be corrosion-resistant	*Guideline on Type Approval Test of Electrical and Electronic Products*(Current valid version), 2.12

Continued Table 5.4.2

6.	Flame retardant	Plastic components of luminaires have flame-retardant and self-quenching characteristics at specified flame	*Guideline on Type Approval Test of Electrical and Electronic Products*(Current valid version), 2.16
7.	External and internal wirings	Conducting wires used in luminaires are to be shipboard wires of an appropriate specification, of which the nominal section is not to be less than 0.75 mm2 and voltage rating not less than 250 V. Enclosures of fixed luminaires are to have at least 2 power cable access holes. For emergency luminaires, 2 additional power cable access holes are needed	Visual examination
8.	Conducted emissions (for discharge lamps only)	*Guideline on Type Approval Test of Electrical and Electronic Products*(Current valid version)., 3.2	*Guideline on Type Approval Test of Electrical and Electronic Products*(Current valid version). 3.2
9.	Particular requirements for incandescent lamps	Chapter 3, PART FOUR of CCS Rules for Classification of Sea-going Steel Ships	Chapter 3, PART FOUR of CCS Rules for Classification of Sea-going Steel Ships
10.	Particular requirements for discharge lamps with operating voltages not exceeding 250 V	Chapter 3, PART FOUR of CCS Rules for Classification of Sea-going Steel Ships	Chapter 3, PART FOUR of CCS Rules for Classification of Sea-going Steel Ships
11.	Particular requirements for discharge lamps with operating voltages more than 250 V	Chapter 3, PART FOUR of CCS Rules for Classification of Sea-going Steel Ships	Chapter 3, PART FOUR of CCS Rules for Classification of Sea-going Steel Ships
12.	Requirements on luminaires	IEC 60092-306:2009 Chapters 4	IEC 60092-306:2009 Chapters 4
13.	Requirements on socket-outlets and plugs for luminaires connection	IEC 60092-306:2009 Chapter 6	IEC 60092-306:2009 Chapter 6

Continued Table 5.4.2

14.	Requirements on lighting accessories.	IEC 60092-306:2009 Chapter 5	IEC 60092-306:2009 Chapter 5
15.	Shock exposure	IEC 60092-306:2009 Section 7.2.2, Chapters 7	IEC 60092-306:2009 Section 7.2.2, Chapters 7
16.	Special chemical and physical attributes.	IEC 60092-306:2009 Section 7.2.5, Chapters 7	IEC 60092-306:2009 Section 7.2.5, Chapters 7
17.	Coating thickness	IEC 60092-306:2009 Section 7.2.6, Chapters 7	IEC 60092-306:2009 Section 7.2.6, Chapters 7

5.4.3 Type test items for floodlights are to comply with the requirements of 5.4.1 and 5.4.2 in this Chapter and in addition, the technical requirements listed in Table 5.4.3.

Type Test Items for Floodlights **Table 5.4.3**

No.	Test item	Technical requirements	Test method
1.	Marking	IEC 60598-2-5:2015 Chapter 5.5	IEC 60598-2-5:2015 Chapter 5.5
2.	Construction	IEC 60598-2-5:2015 Chapter 5.6	IEC 60598-2-5:2015 Chapter 5.6
3.	Endurance test and thermal test	IEC 60598-2-5:2015 Chapter 5.12	IEC 60598-2-5:2015 Chapter 5.12
4.	Dust proof and humidity proof	IEC 60598-2-5:2015 Chapter 5.13	IEC 60598-2-5:2015 Chapter 5.13

5.4.4 Type test items for fixed general purpose luminaires are to comply with the requirements of 5.4.1 and 8.5.4.2 in this Chapter and in addition, the technical requirements listed in Table 5.4.4.

Type Test Items for Fixed General Purpose Luminaires **Table 5.4.4**

No.	Test item	Technical requirements	Test method
1.	Endurance test and thermal test	IEC 60598-2-1:1979 Chapter 1.12	IEC 60598-2-1:1979 Chapter 1.12
2.	Dust proof and humidity proof	IEC 60598-2-1:1979 Chapter 1.13	IEC 60598-2-1:1979 Chapter 1.13

5.4.5 Type test items for portable general purpose luminaires are to comply with the requirements of 5.4.1 and 5.4.2 in this Chapter and in addition, the technical requirements listed in Table 5.4.5.

Type Test Items for Portable General Purpose Luminaires **Table 5.4.5**

No.	Test item	Technical requirements	Test method
1.	Construction	IEC 60598-2-4:1997 Chapter 4.6	IEC 60598-2-4:1997 Chapter 4.6
2.	External and internal wirings	IEC 60598-2-4:1997 Chapter 4.10	IEC 60598-2-4:1997 Chapter 4.10
3.	Protection against electric shock	IEC 60598-2-4:1997 Chapter 4.11	IEC 60598-2-4:1997 Chapter 4.11
4.	Endurance test and thermal test	IEC 60598-2-4:1997 Chapter 4.12	IEC 60598-2-4:1997 Chapter 4.12
5.	Dust proof and humidity proof	IEC 60598-2-4:1997 Chapter 4.13	IEC 60598-2-4:1997 Chapter 4.13

5.4.6 Type test items for handlamps are to comply with the requirements of 5.4.1 and 5.4.2 in this Chapter and in addition, the technical requirements listed in Table 5.4.6.

Type Test Items for Handlamps **Table 5.4.6**

No.	Test item	Technical requirements	Test method
1.	Marking	IEC 60598-2-8:2013 Chapter 8.6	IEC 60598-2-8:2013 Chapter 8.6
2.	Construction	IEC 60598-2-8:2013 Chapter 8.7	IEC 60598-2-8:2013 Chapter 8.7
3.	Terminals	IEC 60598-2-8:2013 Chapter 8.10	IEC 60598-2-8:2013 Chapter 8.10
4.	External and internal wirings	IEC 60598-2-8:2013 Chapter 8.11	IEC 60598-2-8:2013 Chapter 8.11
5.	Protection against electric shock	IEC 60598-2-8:2013 Chapter 8.12	IEC 60598-2-8:2013 Chapter 8.12
6.	Endurance test and thermal test	IEC 60598-2-8:2013 Chapter 8.13	IEC 60598-2-8:2013 Chapter 8.13
7.	Dust proof and humidity proof	IEC 60598-2-8:2013 Chapter 8.14	IEC 60598-2-8:2013 Chapter 8.14
8.	Resistance to heat, fire and tracking	IEC 60598-2-8:2013 Chapter 8.16	IEC 60598-2-8:2013 Chapter 8.16

5.4.7 Type test items for recessed luminaires are to comply with the requirements of 5.4.1 and 5.4.2 in this Chapter and in addition, the technical requirements listed in Table 5.4.7.

Type Test Items for Recessed Luminaires **Table 5.4.7**

No.	Test item	Technical requirements	Test method
1.	External and internal wirings	IEC 60598-2-2:2011 Chapter 2.11	IEC 60598-2-2:2011 Chapter 2.11
2.	Protection against electric shock	IEC 60598-2-2:2011 Chapter 2.12	IEC 60598-2-2:2011 Chapter 2.12
3.	Endurance test and thermal test	IEC 60598-2-2:2011 Chapter 2.13	IEC 60598-2-2:2011 Chapter 2.13
4.	Dust proof and humidity proof	IEC 60598-2-2:2011 Chapter 2.14	IEC 60598-2-2:2011 Chapter 2.14

5.4.8 Type test items for main components of luminaires are given in Table 5.4.8.

Type Test Items for Main Components of Luminaires **Table 5.4.8**

No.	Test item	Technical requirements	Test method
1.	A.C. and/or D.C. supplied electronic control gear for fluorescent lamps	IEC 61347-2-3: 2011+AMD1:2016 CSV	IEC 61347-2-3: 2011+AMD1:2016 CSV
2.	Inductance ballast for fluorescent lamps	IEC 61347-2-8:2006	IEC 61347-2-8:2006
3.	Electromagnetic control gear for discharge lamps (excluding fluorescent lamps)	IEC 61347-2-9:2012	IEC 61347-2-9:2012
4.	Glow-starters for fluorescent lamps	IEC 60155:1993	IEC 60155:1993
5.	Starting devices (excluding glow-starters)	IEC 61347-2-1:2000+A1：2005+A2：2013	IEC 61347-2-1:2000+A1：2005+A2：2013
6.	Edison screw lampholders	IEC 60238:2004	IEC 60238:2004
7.	Bayonet lampholders	IEC 61184: 2008+AMD1：2011	IEC 61184: 2008+AMD1：2011

6 Unit/batch inspection

According to the requirements of the LIST OF CERTIFICATION REQUIREMENTS FOR CLASSED MARINE PRODUCTS of "Rules for Classification of sea-going steel ships", the product is approved only for non-inspection. If the manufacturer applies for unit/batch inspection,

the inspection items and the sampling quantity shall be carried out according to the provisions in Table 6.Additional items may be added, as appropriate. If any sample is found unsatisfactory for any listed test item, such samples are to be doubled for re-inspection. If any unsatisfactory sample is found again, the inspection is to be stopped and the manufacturer is to be required to remove the defects for further inspection.

Items and Sampling number of Luminaires for Unit/Batch Inspection **Table 6**

No.	Test item	Technical requirements	Test method	Sampling number by manufacturer	Sampling number by Surveyor
1.	External appearance, marking, construction and material	3 of this Chapter	As per type test sample and approved technical documents	1%, not less than 3	1%, not less than 3
2.	Functional testing	IEC 60598-1:2014 Annex Q	IEC 60598-1:2014 Annex Q	100%	
3.	Reliability of earthing				
4.	Dielectric strength and insulation resistance				