Test Report issued under the responsibility of:

TEST REPORT

AS/NZS 60598.2.2

(AUSTRALIA/NEW ZEALAND) NATIONAL DIFFERENCES
(Luminaires)

(Part 2.2: Recessed luminaires)

Report Number. ..... :	AOC250908001S
Date of issue ..... :	2025-09-12
Total number of pages ..... :	30
Name of Testing Laboratory preparing the Report ..... :	Shenzhen AOCE Electronic Technology Service Co., Ltd
Applicant's name ..... :	Guangdong GETO I-HOMES Construction Technology Co., Ltd
Address ..... :	1/2 No. 366 Xinxing Road, Gonghe Town, Heshan, China
Test specification:	
Standard ..... :	☒ AS/NZS 60598.2.2:16+ A1:2017 + A2:2021 ☒ AS/NZS 60598.1:2017 + A1:2017 + A2:2020
Test procedure ..... :	IC-4 testing
Non-standard test method ..... :	N/A
TRF template used ..... :	IECEE OD-2020-F3:2022, Ed. 1.2
Test Report Form No. ..... :	AU_NZ_ND_IEC60598_2_2G
Test Report Form(s) Originator .... :	JAS-ANZ
Master TRF ..... :	Dated 2023-11-20

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

This report is not valid as a CB Test Report unless signed by an approved IECEE Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

General disclaimer:

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the Testing Laboratory, responsible for this Test Report.

Test item description.....:	LED Downlight
Trade Mark(s) .....:	N/A
Manufacturer .....:	Vledstar OE Technology Co., Ltd 501,D3, Yaubong, Tianfu Road, Tian liao, Yu tang, Guang ming, Shenzhen, Guangdong, China
Model/Type reference.....:	VLED-DL12WD-60D-11094WF
Ratings.....:	200-240 V~, 50/60 Hz, 12 W

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):			
☒	**Testing Laboratory:**	Shenzhen AOCE Electronic Technology Service Co., Ltd	
Testing location/ address ..... :		Room 202, 2nd Floor, No.12th Building of Xinhe Tongfuyu Industrial Park, Fuhai Street, Baoan District, Shenzhen, Guangdong, China	
Tested by (name, function, signature)..... :		Zhicong Xian Technical Engineer	ZhiCong
Approved by (name, function, signature) .. :		Robin Liu Technical Manager	Robin
☐	**Testing procedure: CTF Stage 1:**	N/A	
Testing location/ address ..... :			
Tested by (name, function, signature)..... :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 2:**	N/A	
Testing location/ address ..... :			
Tested by (name + signature)..... :			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 3:**	N/A	
☐	**Testing procedure: CTF Stage 4:**	N/A	
Testing location/ address ..... :			
Tested by (name, function, signature)..... :			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature) .. :			
Supervised by (name, function, signature) :			

List of Attachments (including a total number of pages in each attachment):

Attachment No.1: Photo document.

Summary of testing:

Tests performed (name of test and test clause):	**Testing location: (CBTL, SPTL, CTF, Subcontractor)**
All tests performed on model	Provide information on testing location (CBTL, SPTL, Client's laboratory, Subcontractor's laboratory and split testing when allowed and used) Shenzhen AOCE Electronic Technology Service Co., Ltd Room 202, 2nd Floor, No.12th Building of Xinhe Tongfuyu Industrial Park, Fuhai Street, Baoan District, Shenzhen, Guangdong, China

Summary of compliance with National Differences

Include only National Differences evaluated and declared by member countries of IECEE CB Scheme. Non-member countries or national or regional standards can be included for information in the General Product Information section of the Test Report but will not to be listed on CB Test Certificate. (See OD 2037, item 7.1).

- IECEE Member countries that are also CENELEC members

  Compliance with Group Differences evaluated ☐ **yes** ☐ **No** ☒ N/A

  No countries to be listed here. Select N/A if no GD TRF published.

  Select No if the client did not request to evaluate Group Differences

- IECEE Member countries with published National Differences which were evaluated:

  Insert countries (ISO codes) or N/A

- IECEE Member countries that did not publish any National Differences:

  Insert countries (ISO codes) or N/A

To support compliance with published National Differences, attach a compilation of relevant ND and/or GD TRFs to the CB Test Report

Use of uncertainty of measurement for decisions on conformity (decision rule) :

☒ No decision rule is specified by the IEC standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty ("simple acceptance" decision rule, previously known as "accuracy method").

☐ Other: … (to be specified, for example when required by the standard or client, or if national accreditation requirements apply)

Information on uncertainty of measurement:
The uncertainties of measurement are calculated by the laboratory based on application of criteria given by OD-5014 for test equipment and application of test methods, decision sheets and operational procedures of IECEE.
IEC Guide 115 provides guidance on the application of measurement uncertainty principles and applying the decision rule when reporting test results within IECEE scheme, noting that the reporting of the measurement uncertainty for measurements is not necessary unless required by the test standard or customer.

Calculations leading to the reported values are on file with the NCB and testing laboratory that conducted the testing.

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

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Test item particulars..... :	
Classification of installation and use..... :	Recessed, used in door
Supply Connection ..... :	Supply cord
Possible test case verdicts:	
- test case does not apply to the test object .....:	N/A
- test object does meet the requirement.....:	P (Pass)
- test object does not meet the requirement.....:	F (Fail)
Testing.....:	*No information required (title only)*
Date of receipt of test item .....:	2025-09-01
Date (s) of performance of tests .....:	2025-09-01 to 2025-09-12

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	☐ **Yes** ☒ **Not applicable**

When differences exist; they shall be identified in the General product information section.

Name and address of factory (ies) ..... :	Vledstar OE Technology Co., Ltd 501,D3, Yaubong, Tianfu Road, Tian liao, Yu tang, Guang ming, Shenzhen, Guangdong, China

General product information and other remarks:

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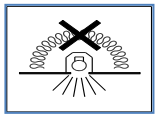
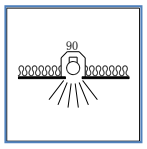
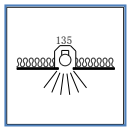
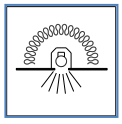
AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
(2)	**CLASSIFICATION OF LUMINAIRES**		-
Section 2.4 (1.2)	**DEFINITIONS**		-
2.4 (1.2)	Addition *Add* the following new definitions after 1.2.91 See Special Variations clause 1.2.101 to 1.2.105		-
2.4	**Variation** *Delete* existing text and *replace* with the following: For the purposes of this document, the definitions of Section 1 of AS/NZS 60598.1 apply, along with the following:		P
	2.4.101 Non-IC luminaire a recessed luminaire that cannot be abutted against or covered by normally flammable materials or used in installations where building insulation or debris is, or may be, present in normal use. NOTE This classification is not suitable for residential installations		N/A
	2.4.102 Do-not-cover luminaire a recessed luminaire that can be used where normally flammable materials, including building insulation, are or may be present, but cannot be abutted against any material and cannot be covered in normal use.		N/A
	2.4.103.1 CA90 luminaire a recessed luminaire that can be abutted against normally flammable materials, including building insulation, but cannot be covered in normal use. Building elements, building insulation or debris have limited access (see 2.4.106) to the heated parts of the luminaire.		N/A
	2.4.103.2 CA135 luminaire (New Zealand only) a recessed luminaire that can be abutted against normally flammable materials, including building insulation, but cannot be covered in normal use. Building elements, building insulation or debris have		N/A

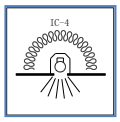
AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	some access (see 2.4.107) to the heated parts of the luminaire.		
	2.4.104.1 IC luminaire a recessed luminaire that can be abutted against normally flammable materials, including building insulation, and can be covered in normal use. Building elements, building insulation or debris have limited access (see 2.4.106) to the heated parts of the luminaire.		N/A
	2.4.104.2 IC-4 luminaire a recessed luminaire that can be abutted against normally flammable materials, including building insulation, and can be covered in normal use. Building elements, building insulation or debris have restricted access (see 2.4.108) to the heated parts of the luminaire. This classification of recessed luminaire is effectively a sealed unit that has a restricted flow of air between the habitable room the luminaire emits light into and the void/space where the main body of the luminaire is located.		P
	2.4.105 outside surface of the luminaire the surface of the luminaire that can be accessed by the probe specified for the classification of the luminaire.		P
	2.4.106 limited access parts accessible to a 5.6 mm diameter probe are not permitted to have surface temperatures exceeding 90 °C under normal operating conditions, excluding the access face.		P
	2.4.107 some access parts accessible to a 50 mm diameter probe are not permitted to have surface temperatures exceeding 135 °C in normal operation, excluding the access face.		P
	2.4.108 restricted access parts accessible to an AS 60529 IP4X probe are not permitted to have surface temperatures exceeding 90 °C in normal operation, including the access face.		P

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	2.4.109 recessed luminaire a luminaire designed to be recessed into a ceiling, wall, floor or similar surface with an access face which, when installed on a mounting surface, emits light into one area, while the body of the luminaire is located in a separate area on the other side of the mounting surface to the access face. Includes a light source and any components of the luminaire required for the luminaire to operate. NOTE 1 Components may include individual components, such as controlgear that is supplied with the luminaire. NOTE 2 Figure ZC1 in Appendix ZC shows the general parts of a recessed luminaire. Appendix ZC also provides examples of recessed luminaire configurations.		P
	2.4.110 access face the surface of the luminaire that emits light into the habitable room, i.e. the surface of the luminaire located in the space representative of the underside of a ceiling or, for wall-mounted luminaires, the visible wall face. (AS/NZS 60598.2.2:2016)		P
2.5.101	Variation Delete existing text and replace with the following: 2.5.101 General Luminaires shall be classified in accordance with the provisions of Section 2 of AS/NZS 60598.1, along with the following. Luminaires shall be classified according to their suitability for use near, or being covered with, building elements or thermal insulation, or both, in accordance with Clause 2.5.102 for Australia or Clause 2.5.103 for New Zealand. NOTE Appendix ZD provides information and guidance on the classifications, symbols, applications and general restrictions on recessed luminaires.		P

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
2.5.102	2.5.102 Australian classifications Luminaires shall be classified as one of the following: a) ..... Non-IC b) .....Do-not-cover c)..... CA90 d) .....IC e) IC-4	IC-4	P
2.5.103	2.5.103 New Zealand classifications Luminaires shall be classified as at least one of the following: a) ..... Non-IC b) .....Do-not-cover c) ..... CA90 d) ..... CA135 e) .....IC f) ..... IC-4 (AS/NZS 60598.2.2:2016)	IC-4	P
2.6.101	Variation Delete existing text and replace with the following: 2.6.101 General The provisions of Clause 3 of AS/NZS 60598.1 apply, along with the following: –Clause 3.2.21 of AS/NZS 60598.1 is replaced by Clause 2.6.102. –The additional requirements of Clause 2.6.103 and Clause 2.6.104 apply, as applicable. (AS/NZS 60598.2.2:2016)		P
2.6.102	2.6.102 Luminaire symbol marking		N/A

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	Recessed luminaires shall be marked with the symbol shown in the appropriate figure of this Clause, corresponding to their classification in accordance with Clause 2.5. Non-IC luminaires shall be marked with the symbol shown in Figure 101.  FIGURE 101 REQUIRED SYMBOL FOR NON-IC LUMINAIRES		
	Do-not-cover luminaires shall be marked with the symbol shown in Figure 102  FIGURE 102 REQUIRED SYMBOL FOR DO-NOT-COVER LUMINAIRES		N/A
	CA90 luminaires shall be marked with the symbol shown in Figure 103  FIGURE 103 REQUIRED SYMBOL FOR CA90 LUMINAIRES Exception: For 24 months from the date of publication of this Standard, luminaires that comply with the requirements for CA80 luminaires in accordance with AS/NZS 60598.2.2:2001, New Zealand only Amendment A, may be marked with the symbol shown in Figure 202 in lieu of the symbol shown in Figure 103. Such CA80 luminaires are deemed to meet the requirements for CA90 luminaires 24 months from the date of publication of this Standard, this exception will cease to apply.  FIGURE 202 PERMITTED EXCEPTION SYMBOL FOR CA90 LUMINAIRES (FOR LUMINAIRES THAT COMPLY WITH CA80		N/A

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	REQUIREMENTS OF NEW ZEALAND ONLY AMENDMENT A OF AS/NZS 60598.2.2:2001).		
	In New Zealand, CA135 luminaires shall be marked with the symbol shown in Figure 104  FIGURE 104 REQUIRED SYMBOL FOR CA135 LUMINAIRES—NEW ZEALAND ONLY Exception: For 24 months from the date of publication of this Standard, CA135 luminaires may be marked with the symbol shown in Figure 203 in lieu of the symbol shown Figure 104. 24 months from the date of publication of this Standard, this exception will cease to apply  FIGURE 203 PERMITTED EXCEPTION SYMBOL FOR CA135 LUMINAIRES—NEW ZEALAND ONLY.		N/A
	IC luminaires shall be marked with the symbol shown in Figure 105.  FIGURE 105 REQUIRED SYMBOL FOR IC LUMINAIRES. Exception: For 24 months from the date of publication of this Standard, IC luminaires may be marked with the symbol shown in Figure 204 in lieu of the symbol shown in Figure 105 24 months from the date of publication of this Standard, this exception will cease to apply.  FIGURE 204 PERMITTED EXCEPTION SYMBOL FOR IC LUMINAIRES		N/A

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	IC-4 luminaires shall be marked with the symbol shown in Figure 106  FIGURE 106 REQUIRED SYMBOL FOR IC-4 LUMINAIRES Exception: For 24 months from the date of publication of this Standard, IC-4 luminaires may be marked with the symbol shown in Figure 205 in lieu of the symbol shown in Figure 106. 24 months from the date of publication of this Standard, this exception will cease to apply  FIGURE 205 PERMITTED EXCEPTION SYMBOL FOR IC-4 LUMINAIRES (AS/NZS 60598.2.2:2016)		P
2.6.103	Addition **Location and durability of marking** The marking required by Clause 2.6.102 shall be— a)legible, durable and visible when the luminaire is installed and viewed from behind;		P
	b) ..... a minimum size of 25 mm × 25 mm; and		P
	c) permanently marked on the luminaire or on a durable swing tag permanently connected to the luminaire. The marking shall comply with the durability test requirements of AS/NZS 60598.1. (AS/NZS 60598.2.2:2016)		P
2.6.104	**Additional information to be supplied with the luminaire**		-

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
2.6.104.1	**2.6.104.1 General** All recessed luminaires shall be supplied with installation instructions containing the following information: a) The minimum clearance distance from the top of the luminaire to any normally flammable building element. b) The minimum clearance distance from the top of the luminaire to any building insulation. c) The minimum clearance distance from the side of the luminaire to any normally flammable building element. d) The minimum clearance distance from the side of the luminaire to any building insulation. If the minimum clearance distances from each side of the luminaire are different, or there are different minimum clearance distances for various types of normally flammable building element or building insulation, then each minimum clearance distance shall be stated separately. NOTE 1 See Appendix ZB for examples of methods satisfying the requirements for the supply of information on minimum clearance distances		P
	If the luminaire is suitable for installing in a non-combustible enclosed space or non-combustible premade enclosure, and the minimum clearance distances required for installation in that space are different from the distances stated in accordance with the above, the minimum clearance distances for the installation, or premade enclosure details, shall be included in the instructions. NOTE 2 Installation in a non-combustible enclosed space may include installation in a rebate in a concrete slab, ceiling or wall		N/A

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	In the section of the instructions where the minimum clearance distances are stated, the following warning shall be included: **WARNING — RISK OF OVERHEATING OR FIRE IF THE CLEARANCE DISTANCES ARE COMPROMISED.** NOTE 3 In some classifications of luminaire, the minimum clearance distance from the top or sides of the luminaire to building elements or insulation, or both, may actually be 0 mm (i.e. the material may abut the luminaire on the sides or the top). In these instances, a wording such as 'building insulation may abut the sides of the luminaire' is a suitable alternative to 'the minimum distance from the side of the luminaire to building insulation is 0 mm'.		N/A
	Luminaires with classification CA135 shall have the additional following warning included: **WARNING — RISK OF FIRE: THIS LUMINAIRE CANNOT BE INSTALLED ABUTTING THERMAL INSULATION OR OTHER BUILDING ELEMENTS THAT ARE NOT SUITABLE FOR EXPOSURE TO CONSTANT TEMPERATURES OF 135 °C.** Where a recessed luminaire is required to be mounted on a specific surface or has additional installation requirements to ensure adequate sealing to maintain its IP rating, the relevant information shall be supplied with the luminaire (AS/NZS 60598.2.2:2016)		N/A
2.6.104.2	**Additional warning**		-
2.6.104.2.1	**2.6.104.2.1 General** Luminaires shall have additional warnings in accordance with 2.6.104.2.2 for Australia and 2.6.104.2.3 for New Zealand		-
2.6.104.2.2	**Australia additional warning** Non-IC luminaires shall be supplied with installation instructions containing the following warning: **WARNING — THIS LUMINAIRE IS NOT SUITABLE FOR INSTALLATION IN LOCATIONS WHERE THERMAL INSULATION IS PRESENT, OR MAY REASONABLY BE EXPECTED TO BE INSTALLED IN THE**		N/A

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	FUTURE, OR WHERE THERE IS A LIKELIHOOD OF OTHER COMBUSTIBLE MATERIAL, E.G. LEAVES OR VERMIN DEBRIS, ETC. COLLECTING ON OR AROUND THE LUMINAIRE. IT IS NOT SUITABLE FOR DOMESTIC INSTALLATIONS OR INSTALLATION IN RESIDENTIAL AREAS OF NON-DOMESTIC INSTALLATIONS (RESIDENTIAL INSTITUTIONS, HOTELS, BOARDING HOUSES, HOSPITALS, ACCOMMODATION HOUSES, MOTELS, HOSTELS AND THE LIKE).		
2.6.104.2.3	**New Zealand additional warning** Non-IC luminaires and Do-Not-Cover luminaires shall be supplied with installation instructions containing the following warning: **WARNING — THIS LUMINAIRE IS NOT SUITABLE FOR INSTALLATION IN LOCATIONS WHERE THERMAL INSULATION IS PRESENT, OR MAY REASONABLY BE EXPECTED TO BE INSTALLED IN THE FUTURE, OR WHERE THERE IS A LIKELIHOOD OF OTHER COMBUSTIBLE MATERIAL, E.G. LEAVES OR VERMIN DEBRIS, ETC. COLLECTING ON OR AROUND THE LUMINAIRE. IT IS NOT SUITABLE FOR DOMESTIC INSTALLATIONS OR INSTALLATION IN RESIDENTIAL AREAS OF NON-DOMESTIC INSTALLATIONS (RESIDENTIAL INSTITUTIONS, HOTELS, BOARDING HOUSES, HOSPITALS, ACCOMMODATION HOUSES, MOTELS, HOSTELS AND THE LIKE).** (AS/NZS 60598.2.2:2016)		N/A
2.6.105	**Luminaires intended for use with independent controlgear** For luminaires intended for use with independent controlgear, pictorial diagrams showing all dimensions for safe installation of the independent controlgear shall be included in the installation instructions.		P
	For luminaires not supplied with, but intended for use with, independent controlgear, the instructions supplied with the recessed luminaire shall specify the brand(s) and model(s) of independent controlgear that may be used.		N/A

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	For luminaires that may be used with supplied independent controlgear or other independent controlgear, the instructions supplied with the recessed luminaire shall specify the brand(s) and model(s) of any other independent controlgear that may be used.		N/A
	The information on brand(s) and model(s) shall be in the instructions supplied with the luminaire or on a website referenced in the instructions supplied with the luminaire. (AS/NZS 60598.2.2:2016)		N/A
2.6.106	**Compliance** Compliance with Clauses 2.6.101 to 2.6.105 is checked by inspection and the relevant tests of AS/NZS 60598.1. (AS/NZS 60598.2.2:2016)		P
2.7.101	General The provisions of Section 4 of AS/NZS 60598.1 apply, along with the following. (AS/NZS 60598.2.2:2016)		P
2.7.102	**2.7.102 Thermal protection devices** Thermal protection devices that operate to enable the luminaire to comply with the requirements of this Standard shall be integral to, or permanently attached immediately adjacent to, the luminaire light source enclosure. Thermal protection devices that operate to enable the luminaire to comply with the requirements of this Standard shall not be separate devices or in independent controlgear. NOTE Thermal protection devices are also known as 'thermal cut-outs'		N/A
	Single operation non-self-resetting thermal protection devices that are user replaceable are not permitted		N/A
	Electronic controls that regulate the light output during abnormal operation tests to enable the luminaire to comply with the requirements of this Standard shall comply with Clause 2.7.103		N/A

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	Thermal protection devices, excluding electronic controls complying with Clause 2.7.103, that operate to enable the luminaire to comply with requirements of this Standard shall comply with IEC 60730-1, in conjunction with the relevant part of the IEC 60730-2 series		N/A
	The number of cycles of operation declared in accordance with IEC 60730-1:2013 (see Clause 6.10 and 6.11 of that Standard) shall not be less than the following: a) Self-resetting thermal protection device 10 000 b) Voltage maintained non-self-resetting thermal protection device 1 000 c) Other non-self-resetting thermal protection device 30 (AS/NZS 60598.2.2:2016)		N/A
2.7.103	**2.7.103 Electronic controls** The operation, or malfunction, of electronic controls that are used to regulate the operation of the light source to enable the luminaire to comply with requirements of this Standard (either during normal or abnormal operation) shall not result in a safety hazard. Such electronic controls are required to comply with a), b), c) or d) below		N/A
	a)Electronic controls that operate during any test of this Standard and fully turn off the light source shall incorporate the operation of a thermal protection device component that complies with IEC 60730-1 with the number of cycles of operation declared in accordance with Clause 2.7.102		N/A
2.7.104	**2.7.104 Controlgear** All controlgear (including controlgear that is a component part and all independent controlgear) that is supplied with, or specified in, the instructions supplied with the luminaire for use with the luminaire shall be assessed with the luminaire to this Standard and shall, in addition, comply with the appropriate part of the AS/NZS 61347 series (AS/NZS 60598.2.2:2016)		P

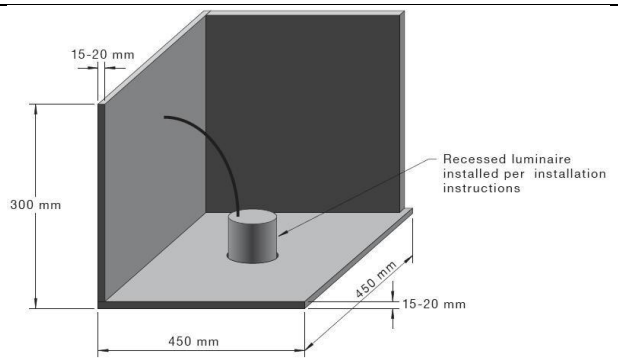
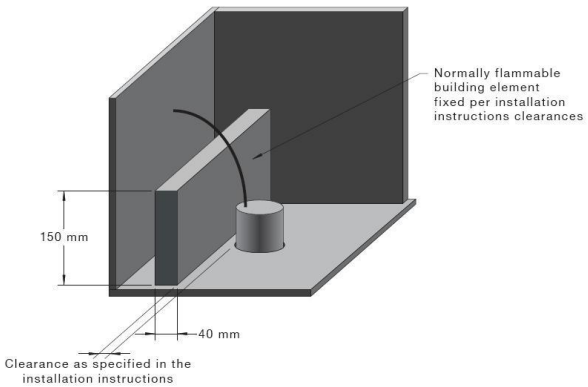
AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
2.13.101	General The provisions of Section 12 of AS/NZS 60598.1 apply together with the requirements of this Clause (Clause 2.13).		N/A
	Clause 12.4 and 12.5 of AS/NZS 60598.1 are applied in conjunction with the following: a) .... For Non-IC and Do-not-cover luminaires, the requirements of Clauses 12.4 and 12.5 of AS/NZS 60598.1 are modified by Clause 2.13.102.		N/A
	b) ..... For CA90 and CA135 luminaires, the requirements of Clauses 12.4 and 12.5 of AS/NZS 60598.1 are modified by Clause 2.13.103.		N/A
2.13.102	**Thermal tests for Non-IC and Do-not-cover luminaires**		-
	2.13.102.1 Normal operation test for Non-IC and Do-not-cover luminaires Non-IC and Do-not-cover luminaires shall be tested in accordance with the requirements of Paragraph ZA3 in Appendix ZA. When the luminaire is tested in accordance with Paragraph ZA3, no temperature shall exceed—		N/A
	a) .90 °C on the luminaire mounting surface, or on any of the internal surfaces of the side and top of the test box, or on the surface of any building element installed in accordance with the manufacturer's instructions;		N/A
	b) for Do-not-cover luminaires only—90 °C on the surface of any simulated building element or insulation; and		N/A
	c)...for other parts, the appropriate values given in Tables 12.1 and 12.2 of AS/NZS 60598.1		N/A
	There shall be no damage to the luminaire such as scorching, deformation or melting. During the test, no thermal protection device or electronic control that fully turns off the light source within the luminaire or independent controlgear shall operate (AS/NZS 60598.2.2:2016)		N/A
2.13.103	**2.13.103 Thermal tests for CA90 and CA135 luminaires**		-

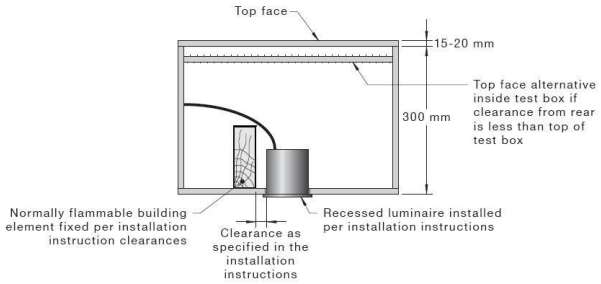
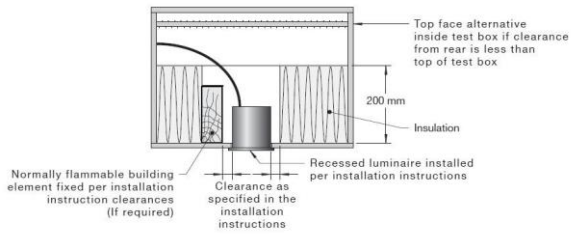
AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
2.13.103.1	**2.13.103.1 Normal operation test for CA90 and CA135 luminaires** CA90 and CA135 luminaires shall be tested in accordance with the requirements of Paragraph ZA4. When the luminaire is tested in accordance with Paragraph ZA4, no temperature shall exceed—		N/A
	a) .90 °C on the luminaire mounting surface, or on any of the internal surfaces of the side and top of the test box, or on the surface of any building element installed in accordance with the manufacturer's instructions;		N/A
	b) ..... for CA90 luminaires—90 °C on the outside surface of the luminaire accessible to the relevant test probe of Clause 2.14;		N/A
	c).... for CA135 luminaires—135 °C on the outside surface of the luminaire accessible to the relevant test probe of Clause 2.14; and		N/A
	d) ..for other parts, the appropriate values given in Tables 12.1 and 12.2 of AS/NZS 60598.1		N/A
	There shall be no damage to the luminaire such as scorching, deformation or melting. During the test, no thermal protection device or electronic control that fully turns off the light source within the luminaire or independent controlgear shall operate (AS/NZS 60598.2.2:2016)		N/A
2.13.103.2	**2.13.103.2 Abnormal operation test for CA90 and CA135 luminaires** CA90 and CA135 luminaires shall be tested in accordance with the requirements of Paragraph ZA5. When the luminaire is tested in accordance with Paragraph ZA5, no temperature shall exceed—		N/A
	a) .....90 °C on the luminaire mounting surface;		N/A
	b) ..... for CA90 luminaires—130 °C on the outside surface of the luminaire accessible to the relevant test probe of Clause 2.14; and		N/A

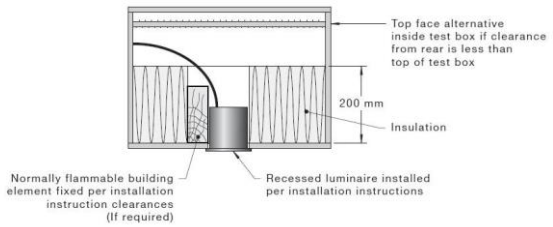
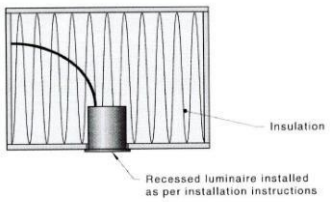
AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	c).... for CA135 luminaires—150 °C on the outside surface of the luminaire accessible to the relevant test probe of Clause 2.14.		N/A
	There shall be no damage to the luminaire such as scorching, deformation or melting. During the test, thermal protection devices or electronic controls within the luminaire may operate, however, the thermal protection devices of any independent controlgear shall not operate to limit temperatures (AS/NZS 60598.2.2:2016)		N/A
	2.13.104 Thermal tests for IC and IC-4 luminaires IC and IC-4 luminaires shall be tested in accordance with the requirements of Paragraph ZA6. When the luminaire is tested in accordance with Paragraph ZA6, no temperature shall exceed—		P
	a) .....90 °C on the luminaire mounting surface;		P
	b) .... 90 °C on the outside surface of the luminaire accessible to the relevant test probe of Clause 2.14; and		P
	c)...for other parts, the appropriate values given in Tables 12.1 and 12.2 of AS/NZS 60598.1		P
	There shall be no damage to the luminaire such as scorching, deformation or melting. During the test, no thermal protection device, or electronic control that fully turns off the light source, within the luminaire or independent controlgear shall operate (AS/NZS 60598.2.2:2016)		P
2.14.101	**2.14.101 General** The provisions of Section 9 of AS/NZS 60598.1 apply, along with the following. For luminaires with an IP classification greater than IP20, and for CA90, CA135, IC and IC-4 luminaires, the order of the tests specified in Section 9 of AS/NZS 60598.1 shall be as specified in Clause 2.3 of this Standard. (AS/NZS 60598.2.2:2016)		N/A

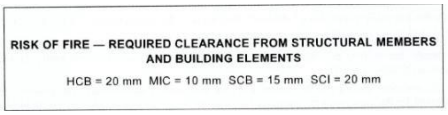
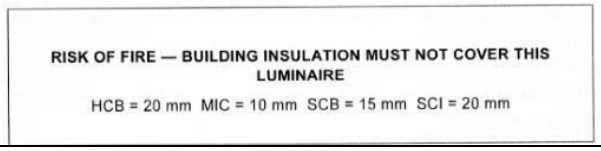
AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
2.14.102	**2.14.102 Ingress test for CA90 and IC luminaires** Solid foreign objects shall have limited access to the hot surfaces of CA90 and IC luminaires		N/A
	Test probe 19 of IEC 61032 shall be applied without appreciable force to all external surfaces and any opening of the luminaire. Test probe 19 shall not be applied to the access face.		N/A
	The 5.6 mm diameter of the probe shall not enter into an area where the temperature of any surface (including parts of the luminaire or the lamp) exceeds the temperature limit for 'mounting surface: normally flammable surface' of AS/NZS 60598.1, when the surface is measured while the luminaire is operated in accordance with the thermal test conditions of Paragraph ZA4 for CA90 luminaires and Paragraph ZA6 for IC luminaires. (AS/NZS 60598.2.2:2016)		N/A
2.14.103	**2.14.103 Ingress test for CA135 luminaires—New Zealand only** **2.14.103.1** Solid foreign objects shall have some access to the hot surfaces of CA135 luminaires. Compliance is verified in accordance with Clauses 2.14.103.2 and 2.14.103.3. (AS/NZS 60598.2.2:2016)		N/A
	2.14.103.2 Test probe 1 of IEC 61032 shall be applied without appreciable force to all external surfaces and any opening of the luminaire. Test probe 1 is not applied to the access face.		N/A
	The 50 mm diameter of the probe shall not enter into an area where the temperature of any surface (including parts of the luminaire or the lamp) exceeds a value of 135 °C, when the surface is measured while the luminaire is operated in accordance with the thermal test conditions of Paragraph ZA4. (AS/NZS 60598.2.2:2016)		N/A
	2.14.103.3 The total area of all openings in the luminaire body that allows airflow through the luminaire (i.e. airflow between the ceiling/wall space and the illuminated area), excluding openings in the access face, shall be no more		N/A

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	than 5 % of the area of the opening in the mounting surface (opening in mounting surface as required by the manufacturer to insert the luminaire) (AS/NZS 60598.2.2:2016)		
2.14.104	**2.14.104 Ingress test for IC-4 luminaires** Solid foreign objects shall have restricted access to the hot surfaces of IC-4 luminaires and restricted access to the open area that allows airflow through the luminaire (i.e. between the area that the body of the luminaire is located in and the area that the light source illuminates).		P
APPENDIX ZA	**THERMAL TEST PROCEDURES FOR RECESSED LUMINAIRE**		**-**
ZA 1	General		-
ZA 2	Test Box		P
	a) The mounting surface are made of 15–20mm thick porous wood fibre board		P
	b) The vertical sides and top of the test box are made of 15–20mm thick porous wood fibre board		P
	c) The dimensions of the test box shall be 450 mm wide ×450 mm long ×300 mm high		P
	d) The minimum horizontal distance from the side of the luminaire to the side of the test box shall be 75 mm and the vertical distance from the top of the luminaire to the top of the test box shall be 75 mm		P
	e) Where these side and vertical distances cannot be met due the size of the luminaire, the test box dimensions are increased the minimum amount to meet the 75 mm clearance dimensions		P
	f) The internal surface are be painted matt black		P
	Test Box: Figure ZA.1		N/A

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	 FIGURE ZA.1 EXAMPLE OF TEST BOX (with front, side and top removed)		
ZA 3	Test procedure for NON-IC or Do-not-cover luminaires		N/A
ZA 3.1	General		N/A
	a) NON-IC and Do-not-cover luminaires to normally flammable building elements		N/A
	b) Do-not-cover luminaires to any thermal insulation		N/A
	as specified by manufacturer in the installation instructions		N/A
ZA 3.2	Test set-up		N/A
ZA 3.2.1	General		N/A
	The installation instructions have the information on clearances from normally flammable building elements, then a simulated building element of nominal dimensions 150 x 40 mm is added to the test box at the clearance from the luminaire as specified in the manufacturer's instructions as shown in Figure ZA.2  FIGURE ZA.2 EXAMPLE OF TEST BOX WITH SIMULATED BUILDING ELEMENT (with front, side and top removed)		N/A

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	The installation instructions have the information to indicate a distance from the top of the luminaire to any building element that is less than the clearance to the top of the test box, then a false ceiling shall be added to the test box at the clearance from the luminaire as specified in the manufacturer's instructions as shown in Figure ZA.3  FIGURE ZA.3 EXAMPLE OF TEST BOX WITH FALSE CEILING TO MANUFACTURERS INSTRUCTIONS		N/A
ZA 3.2.2	Non-IC luminaires	Figure ZA 2	N/A
ZA 3.2.3	Do-not-cover luminaires	Figure ZA 4	N/A
	Thermal insulation to a height of 200 mm is added to		N/A
	the test box with clearance maintained from the luminaire as specified in the installation instructions. The type of thermal insulation is formed insulation where 200 mm is equivalent to RI 4.0 classification in accordance with AS/NZS 4859.1  FIGURE ZA.4 EXAMPLE OF TEST BOX FOR DO NOT COVER CLASSIFICATION LUMINAIRES		
ZA 3.3	Test requirements and procedure		N/A
ZA 4	Test procedure for CA90 or CA135 luminaires	Figure ZA 5	N/A
ZA 4.1	General		N/A
	For CA90 and CA135 classification luminaires this test procedure is for assessing suitability of normally flammable materials abutting a luminaire as specified in installation instructions		N/A
ZA 4.2	Test set-up		N/A

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	Thermal insulation to a height of 200 mm is added to the test box placed to fill the remaining space between the side of the test box and the luminaire and placed to abut the sides of the luminaire. The insulation is pushed around the luminaire to form a close fit to the sides of the luminaire without compression. The type of thermal insulation is formed insulation where 200 mm is equivalent to RI 4.0 classification in accordance with AS/NZS 4859.1  FIGURE ZA.5 EXAMPLE OF TEST BOX FOR CA90 AND CA135 CLASSIFICATION LUMINAIRES		N/A
ZA 4.3	Test requirements and procedure		N/A
ZA 5	Test procedure for abnormal operation Do-not-cover, CA90, CA135 luminaires	Figure ZA 6	N/A
ZA 5.1	General		N/A
ZA 5.2	Thermal insulation is then added to the test box to completely fill the test box. The insulation is pushed		N/A
	around the luminaire to from a close fit to the sides and top of luminaire without compression. The type of thermal insulation is formed insulation where 200 mm is equivalent to RI 4.0 classification in accordance with AS/NZS 4859.1  FIGURE ZA6 TEST SET-UP FOR ABNORMAL OPERATION FOR DO-NOT-COVER, CA90 AND CA135 AND NORMAL OPERATION FOR IC AND IC-4 LUMINAIRES		
ZA 5.3	Test requirements and procedure		N/A
ZA. 6	Test procedure for normal operation IC and IC-4 luminaires	Figure ZA 6	P
ZA 6.1	Thermal insulation is then added to the test box to completely fill the test box. The insulation is pushed around the luminaire to from a close fit to the sides		P

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict
	and top of luminaire without compression. The type of thermal insulation is formed insulation where 200 mm is equivalent to RI 4.0 classification in accordance with AS/NZS 4859.1 The test set-up is shown in Figure ZA6		
ZA 6.2	Test requirements and procedure		P
APPENDIX ZB	**EXAMPLES OF METHODS SATISFYING REQUIREMENTS FOR THE SUPPLY OF INFORMATION ON MINIMUM CLEARANCE DISTANCE**		--
	The information on minimum clearance distances could then be provided in the instructions:  		P
	For Do-not-cover luminaires, the warning could be modifiede as follows:  		N/A
	For Non-IC luminaires, the warning could be modifiede as follows:		N/A
	 		
APPENDIX ZC	**EXAMPLES OF RECESSED LUMINAIRES**		--
APPENDIX ZD	**GUIDANCE ON CLASSFICATIONS**		--

AS/NZS 60598.2.2			
Clause	Requirement + Test	Result - Remark	Verdict

APPENDIX ZA	**TABLE: Thermal tests of Clause ZA6**		P
	Type reference ..... :	VLED-DL12WD-60D-11094WF	—
	Lamp used ..... :	LEDs	—
	Lamp control gear used ..... :	LED controlgear	—
	Mounting position of luminaire ..... :	-	—
	Supply wattage (W) ..... :	13.9 W	—
	Supply current (A) ..... :	0.059 A	—
	Temperatures in test 1 - 4 below are corrected for ta (°C) ..... :	25 °C	—
	- abnormal operating mode ..... :	-	—
	- test 1: rated voltage ..... :	-	—
	- test 2: 1,06 times rated voltage, or 1,05 times rated wattage or 1,1 times constant voltage/current ..... :	254.4 V	—
	- test 3: Load on wiring to socket-outlet, 1,06 times voltage or 1,05 times wattage ..... :	-	—
	Through wiring or looping-in wiring loaded by a current of A during the test ..... :	-	—
	- test 4: 1,1 times rated voltage, or 1,05 times rated wattage or 1,1 times constant voltage/current or 130/150% of rated input voltage ..... :	-	—

Temperature measurements (°C)

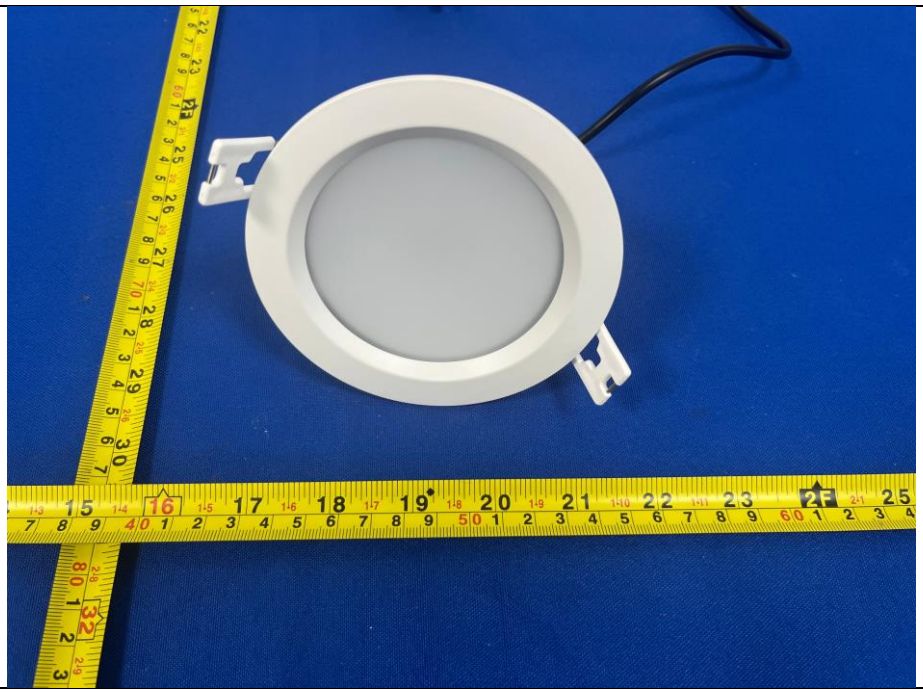
Part	Ambient	Normal				Abnormal	
		test 1	test 2	test 3	limit	test 4	limit
Mounting surface	25	-	58.9	-	90	-	-
Outside surface of the luminaire (Max. temperature)	25	-	69.8	-	90	-	-
LED driver tc	25	-	78.4	-	85	-	-
Internal wire near LED	25	-	70.5	-	90	-	-

Supplementary information:

Attachment No.1 **Product Photos**

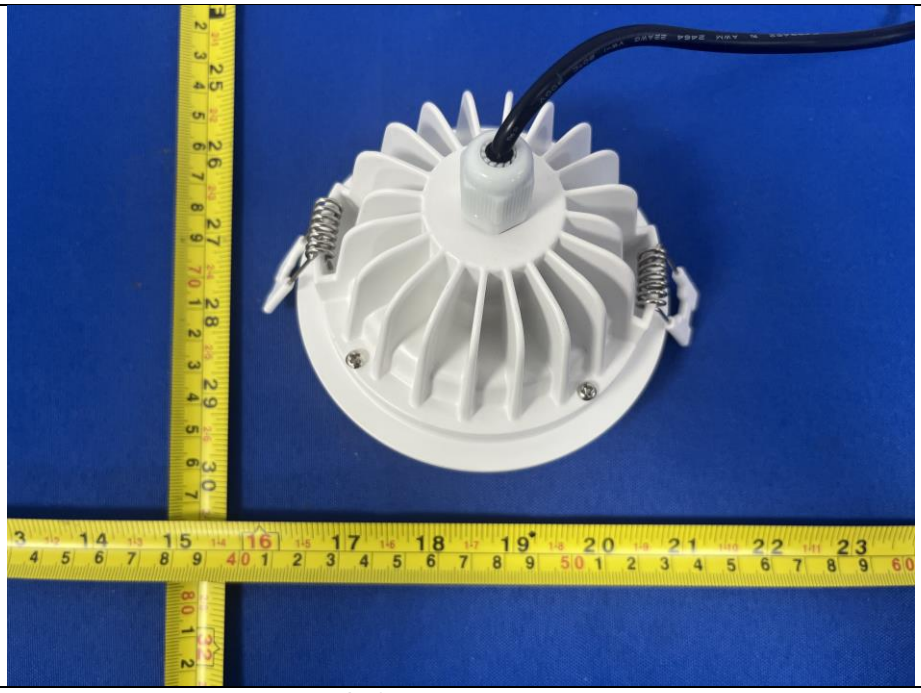
Details of: Fig. 1

Details of: Fig. 2



Attachment No.1 **Product Photos**

Details of: Fig. 3



- End of report -