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SHENZHEN LCS COMPLIANCE TESTING LABORATORY LTD REPORT NO.: LCS1701121500S

TEST REPORT

APPENDIX ZZ

VARIATIONS TO IEC 60598-2-2, ED. 3.0 (2011) FOR AUSTRALIA AND NEW ZEALAND

Report reference No.: LCS1701121500S

Tested by(name + signature): Seven Liu

Approved by(name +signature): Hart Qiu

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Contents: 12 pages



Testing laboratory

Name: Shenzhen LCS Compliance Testing Laboratory Ltd.

Address: 1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China

Testing location: As above

Client

Name: Evolite Lighting Limited

Address: 2nd floor, Building D2, YinFeng Industrial Area, HangKong Road, Xixiang, Baoan district, Shenzhen City, China.

Manufacturer

Name: Evolite Lighting Limited

Address: 2nd floor, Building D2, YinFeng Industrial Area, HangKong Road, Xixiang, Baoan district, Shenzhen City, China.

Test specification

Standard: Amendment A to AS/NZS 60598.2.2:2001

Test procedure: Compliance with Amendment A to AS/NZS 60598.2.2:2001

Non-standard test method: N/A

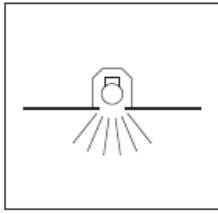
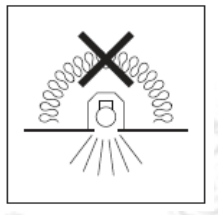
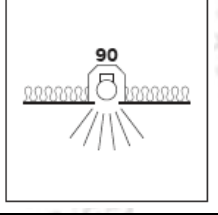
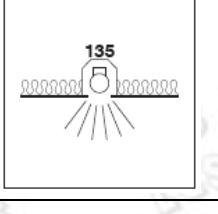
Test item Description: LED Downlight

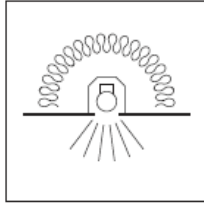
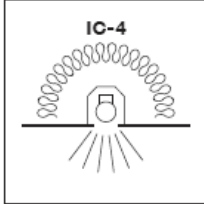
Trademark: Evolite

Model and/or type reference.....: X20-18T

Rating(s): 220-240Vac, 50/60Hz, 20W, Class II

<p>Test item particulars</p> <p>Classification of installation and use: Class II</p> <p>Supply Connection: Plug</p>								
<p>Test case verdicts</p> <p>Test case does not apply to the test object ...: N(N/A)</p> <p>Test item does meet the requirement: P(Pass)</p> <p>Test item does not meet the requirement ...: F(Fail)</p>								
<p>Testing</p> <p>Date of receipt of test item.....: January 10, 2017</p> <p>Date(s) of performance of test.....: January 10, 2017 – January 17, 2017</p>								
<p>General remarks</p> <p>This report shall not be reproduced except in full without the written approval of the testing laboratory.</p> <p>The test results presented in this report relate only to the item tested.</p> <p>"(see remark #)" refers to a remark appended to the report.</p> <p>"(see Annex #)" refers to an annex appended to the report.</p> <p>Throughout this report a comma is used as the decimal separator.</p> <p style="text-align: center;">Modified Information</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px;">Version</th> <th style="padding: 2px;">Report No.</th> <th style="padding: 2px;">Revision Data</th> <th style="padding: 2px;">Summary</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 2px;">V1.0</td> <td style="text-align: center; padding: 2px;">LCS1701121500S</td> <td style="text-align: center; padding: 2px;">/</td> <td style="text-align: center; padding: 2px;">Original Version</td> </tr> </tbody> </table>	Version	Report No.	Revision Data	Summary	V1.0	LCS1701121500S	/	Original Version
Version	Report No.	Revision Data	Summary					
V1.0	LCS1701121500S	/	Original Version					
<p>General product information</p> <ol style="list-style-type: none"> 1. The test temperature is 25°C 2. The report include: Attachment No. 1: 1 page of product photos 								

VARIATIONS TO IEC 60598-2-2, ED. 3.0 (2011)			
Cl.	Requirement – Test	Result	Verdict
ZZ1	Scope		--
ZZ2	Variations		P
2.5.101	Classification for luminaires		P
2.5.101.1 & 2.5.101.2	Australian and New Zealand Classifications		--
	a) NON-IC		N
	b) Do Not Cover		N
	c) CA90		N
	d) CA135		N
	e) IC		N
	f) IC-4		P
2.6	MARKING		P
2.6.101	General		P
2.6.102	Luminaire symbol marking		P
	NON-IC		N
	Do Not Cover		N
	CA90		N
	CA135		N

VARIATIONS TO IEC 60598-2-2, ED. 3.0 (2011)			
Cl.	Requirement – Test	Result	Verdict
	IC		N
	IC-4		P
2.6.103	Location and durability of marking		P
	a) Legible, durable and visible		P
	b) Minimum size of 25mm x 25mm		P
	c) Permanently marked on the luminaire or on a durable awing tag permanently connected to the luminaire		P
2.6.104	Additional information to be supplied with the luminaire		P
2.6.104.1	a) The minimum clearance distance from the top of luminaire to any normally flammable building element		P
	b) The minimum clearance distance from the top of luminaire to any building insulation		P
	c) The minimum clearance distance from the side of luminaire to any normally flammable building element		P
	d) The minimum clearance distance from the side of luminaire to any building insulation		P
	WARNING - Risk of overheating or fire if the clearance distances are compromised		P
	Warning of CA135 luminaire 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		N
2.6.104.2	Additional warning		P
2.6.104.2.1	General		P
2.6.104.2.2 & 2.6.104.2.3	Australia additional warning: Recessed luminaires classified as Non-IC: New Zealand additional warning: Recessed luminaires classified as Non-IC and Do-Not-Cover:		N

VARIATIONS TO IEC 60598-2-2, ED. 3.0 (2011)			
Cl.	Requirement – Test	Result	Verdict
	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 INSTALLATION OR INSTALLATION IN RESIDENTIAL AREAS OF NON-DOMESTIC INSTALLATIONS (RESIDENTIAL INSTITUTIONS, HOTELS, BOARDING HOUSES, HOSPITALS, ACCOMMODATION HOUSES, MOTELS, HOSTELS AND THE LIKE)		
2.6.105	Luminaires intended for use with independent controlgear		P
2.6.106	Compliance		P
2.7	Construction		P
2.7.101	General		P
2.7.102	Thermal protection devices		
	a) self resetting thermal protection device	10 000 cycles	N
	b) voltage maintained non-self-resetting thermal protection device	10 00 cycles	N
	c) other non-self-resetting thermal protection device	30 cycles	N
2.7.103	Electronic controls		N
2.7.104	Controlgear: comply with the appropriate standard		N
2.13	Thermal tests		--
2.13.101	General		P
	a) For Non-IC and Do-not-cover luminaires, the requirements of Clause 12.4 and 12.5 of AS/NZS 60598.1 are modified by clause 2.13.102		N
	b) For CA90 and CA135 luminaires, the requirements of Clause 12.4 and 12.5 of AS/NZS 60598.1 are modified by clause 2.13.103		N
	c) For IC and IC-4 luminaires, the requirements of Clause 12.4 and 12.5 of AS/NZS 60598.1 are modified by clause 2.13.104		P

VARIATIONS TO IEC 60598-2-2, ED. 3.0 (2011)			
Cl.	Requirement – Test	Result	Verdict
2.13.102	Thermal tests for Non-IC and Do-not-cover luminaires		N
2.13.102.1	Normal operation tests for Non-IC and Do-not-cover luminaires		N
	a) 90 °C on the luminaires mounting surfaces, or on the internal surfaces of the side and top of the test box, or any building element installed as per manufacturer's instructions		N
	b) Do-not-cover luminaires only—90 °C on the surface of any simulated building element or insulation.		N
	c) for other parts, the appropriate values given in Tables 12.1 and 12.2 of AS/NZS 60598.1		N
2.13.102.2	Abnormal operation tests for Do-not-cover luminaires		N
	a) 130 °C on surface of insulation		N
	b) 90 °C on the mounting surface		N
2.13.103	Thermal tests for CA90 and CA135 luminaires		N
2.13.103.1	Normal operation tests for CA90 and CA135 luminaires		N
	a) 90 °C on the mounting surface, or on the internal surfaces of the side and top of the test box, or any building element installed as per manufacturer's instructions		N
	b) for CA90 luminaire—90 °C on the outside surface of the luminaire accessible to the relevant test probe of Clause 2.14		N
	c) for CA135 luminaire—135 °C on the outside surface of the luminaire accessible to the relevant test probe of Clause 2.14		N
	d) or other parts, the appropriate values given in Tables 12.1 and 12.2 of AS/NZS 60598.1		N
2.13.103.2	Abnormal operation tests for CA90 and CA135 luminaires		N
	a) 90 °C on the mounting surface		N
	b) for CA90 luminaire—130 °C on the outside surface of the luminaire accessible to the relevant test probe of Clause 2.14		N
	c) for CA135 luminaire—150 °C on the outside surface of the luminaire accessible to the relevant test probe of Clause 2.14		N

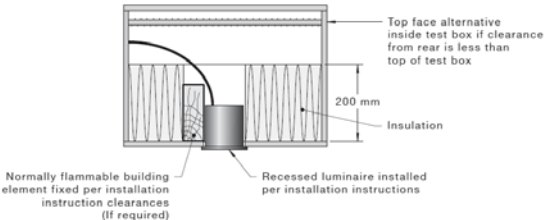
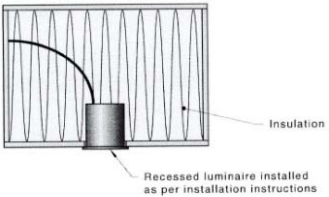
VARIATIONS TO IEC 60598-2-2, ED. 3.0 (2011)			
Cl.	Requirement – Test	Result	Verdict
2.13.104	Thermal tests for IC and IC-4 luminaires		P
	a) 90 °C on the mounting surface		P
	b) 90 °C on the outside surface of the luminaire accessible to the relevant test probe of Clause 2.14		P
	c) for other parts, the appropriate values given in Tables 12.1 and 12.2 of AS/NZS 60598.1		P

2.14	Ingress test for luminaires		--
2.14.101	General		P
	For luminaires with an IP classification greater than IP20, or classified as CA90, CA135, IC or IC-4, the order of the tests specified in Section 9 of AS/NZS 60598.1		P
2.14.102	Ingress test for CA90 and IC		N
2.14.103	Ingress test for CA135 (New Zealand only)		N
2.14.104	Ingress test for IC-4		P
	IP4X shall be applied to the complete luminaire and any opening of the luminaire including the access face		P

APPENDIX ZA	Thermal test procedures for recessed luminaire		--
ZA 1	General		P
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 x 450 mm x 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

VARIATIONS TO IEC 60598-2-2, ED. 3.0 (2011)			
Cl.	Requirement – Test	Result	Verdict
	<p>Test Box: Figure ZA.1</p> <p>FIGURE ZA.1 EXAMPLE OF TEST BOX (with front, side and top removed)</p>		P
ZA 3	Test procedure for NON-IC or Do-not-cover luminaires		N
ZA 3.1	General		N
	a) NON-IC and Do-not-cover luminaires to normally flammable building elements		N
	b) Do-not-cover luminaires to any thermal insulation as specified by manufacturer in the installation instructions		N
ZA 3.2	Test set-up		N
ZA 3.2.1	General		N
	<p>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</p> <p>FIGURE ZA.2 EXAMPLE OF TEST BOX WITH SIMULATED BUILDING ELEMENT (with front, side and top removed)</p>		N
	The installation instructions have the information to indicate a distance from the top of the luminaire		N

VARIATIONS TO IEC 60598-2-2, ED. 3.0 (2011)			
Cl.	Requirement – Test	Result	Verdict
	<p>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</p> <p>FIGURE ZA.3 EXAMPLE OF TEST BOX WITH FALSE CEILING TO MANUFACTURERS INSTRUCTIONS</p>		
ZA 3.2.2	Non-IC luminaires	Figure ZA 2	N
ZA 3.2.3	Do-not-cover luminaires	Figure ZA 4	N
	<p>hermal insulation to a height of 200 mm is added to 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</p> <p>FIGURE ZA.4 EXAMPLE OF TEST BOX FOR DO NOT COVER CLASSIFICATION LUMINAIRES</p>		N
ZA 3.3	Test requirements and procedure		N
ZA 4	Test procedure for CA90 or CA135 luminaires	Figure ZA 5	N
ZA 4.1	General		N
	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
ZA 4.2	Test set-up		N
	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		N

VARIATIONS TO IEC 60598-2-2, ED. 3.0 (2011)			
Cl.	Requirement – Test	Result	Verdict
	<p>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</p>  <p>FIGURE ZA.5 EXAMPLE OF TEST BOX FOR CA90 AND CA135 CLASSIFICATION LUMINAIRES</p>		
ZA 4.3	Test requirements and procedure		N
ZA 5	Test procedure for abnormal operation Do-not-cover, CA90, CA135 luminaires	Figure ZA 6	N
ZA 5.1	General		N
ZA 5.2	<p>Thermal insulation is then added to the test box to completely fill the test box. The insulation is pushed around the luminaire to form 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</p>  <p>FIGURE ZA6 TEST SET-UP FOR ABNORMAL OPERATION FOR DO-NOT-COVER, CA90 AND CA135 AND NORMAL OPERATION FOR IC AND IC-4 LUMINAIRES</p>		N
ZA 5.3	Test requirements and procedure		N
ZA. 6	Test procedure for normal operation IC and IC-4 luminaires	Figure ZA 6	P
ZA 6.1	<p>Thermal insulation is then added to the test box to completely fill the test box. The insulation is pushed around the luminaire to form 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</p> <p>The test set-up is shown in Figure ZA6</p>		P
ZA 6.2	Test requirements and procedure		P

VARIATIONS TO IEC 60598-2-2, ED. 3.0 (2011)			
Cl.	Requirement – Test	Result	Verdict
APPENDIX ZB	EXAMPLES OF METHODS SATISFYING REQUIREMENTS FOR THE SUPPLY OF INFORMATION ON MINIMUM CLEARANCE DISTANCE		--
	<p>The information on minimum clearance distances could then be provided in the instructions:</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;">RISK OF FIRE — REQUIRED CLEARANCE FROM STRUCTURAL MEMBERS AND BUILDING ELEMENTS</p> <p style="text-align: center;">HCB = 20 mm MIC = 10 mm SCB = 15 mm SCI = 20 mm</p> </div>		P
	<p>For Do-not-cover luminaires, the warning could be modified as follows:</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;">RISK OF FIRE — BUILDING INSULATION MUST NOT COVER THIS LUMINAIRE</p> <p style="text-align: center;">HCB = 20 mm MIC = 10 mm SCB = 15 mm SCI = 20 mm</p> </div>		N
	<p>For Non-IC luminaires, the warning could be modified as follows:</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;">DANGER — RISK OF FIRE</p> <p style="text-align: center;">– SHALL NOT BE INSTALLED IN DOMESTIC PREMISES</p> <p style="text-align: center;">HCB = 20 mm MIC = 10 mm SCB = 15 mm SCI = 20 mm</p> </div>		N
APPENDIX ZC	EXAMPLES OF RECESSED LUMINAIRES		--
APPENDIX ZD	GUIDANCE ON CLASSIFICATIONS		--

Tables

APPENDIX ZA Normal Temperature Test				P
	Model.....:	X20-18T		--
	Test voltage.....:	1.06x240V~		--
	Measurement current, Power and power factor.....:	0.08A, 19.5W, 0.963PF		--
	Test set-up	Figure ZA6		--
No.	Thermocouple location	T (°C)	Limit (°C)	Verdict
101	Mounting surface	88.5	90	Pass
102	Outside surface of the luminaire	89.3	90	Pass
103	Driver tc point	62.4	85	Pass
104	Ambient	25.0	--	--

APPENDIX ZA Abnormal Temperature Test				N
	Model.....:	X20-18T		--
	Test voltage.....:	--		--
	Measurement current, Power and power factor.....:	--		--
	Test set-up	Figure ZA6		--
No.	Thermocouple location	T (°C)	Limit (°C)	Verdict
--	--	--	--	--

Model list			
X20A-18T+RA1	X20A-18T+RA2	X20A-18T+RA2+R	X20A-18T+RA3
X20A-18T+RA4	X20A-18T+RA5	X20A-18T+RA6	X20A-18T+RA7
X20A-18T+RF1	X20A-18T+RF2	X20A-18T+RF3	X20A-18T+RF4
X20A-18T+RF5	X20A-18T+RF6	X20A-18T+RF7	X20A-18T+RF8
X20A-18T+RF9	X20A-18T+SQ1	X20A-18T+SQ2	X20A-18T+SQ3
X20A-18T+SQ4	X20A-18T+SQ5	X20A-18T+SQ6	X20A-18T+SQ7
X20A-18T+TS1	X20N-18T+RA1	X20N-18T+RA2	X20N-18T+RA2+R
X20N-18T+RA3	X20N-18T+RA4	X20N-18T+RA5	X20N-18T+RA6
X20N-18T+RA7	X20N-18T+RF1	X20N-18T+RF2	X20N-18T+RF3
X20N-18T+RF4	X20N-18T+RF5	X20N-18T+RF6	X20N-18T+RF7
X20N-18T+RF8	X20N-18T+RF9	X20N-18T+SQ1	X20N-18T+SQ2
X20N-18T+SQ3	X20N-18T+SQ4	X20N-18T+SQ5	X20N-18T+SQ6
X20N-18T+SQ7	X20N-18T+TS1	--	--
.....THE END.....			

ATTACHMENT 1

Photo Documentation

View:
Model:
X20-18T

- General
- Front
- Rear
- Internal
- Top
- Bottom
- PWB



Figure 1

View:

- General
- Front
- Rear
- Internal
- Top
- Bottom
- PWB



Figure 2