

1.0 Reference and Address			
Report Number	140828035GZU-001	Original Issued: 12-Jan-2015	Revised: 10-Oct-2016
Standard(s)	UL 1598 Issued: 2008/09/17 Ed:3 Rev: 2012/10/17 Luminaires CSA C22.2 No. 250.0 Issued: 2008/09/17 Ed: 3 (R2013) Luminaires; Gen. Inst. No. 1: 2010, Gen. Inst. No. 2: 2012		
Applicant	Shenzhen Ohmax Optoelectronic Lighting Co., Ltd	Manufacturer	Shenzhen Ohmax Optoelectronic Lighting Co., Ltd
Address	No. 132, Fuxing Street, Hehua Community, Pinghu Subdistrict, Longgang District, Shenzhen, Guang Dong	Address	No. 132, Fuxing Street, Hehua Community, Pinghu Subdistrict, Longgang District, Shenzhen, Guang Dong
Country	China	Country	China
Contact	Mr. Pollo Wong	Contact	Mr. Pollo Wong
Phone	86-755-28455703	Phone	86-755-28455703
FAX	NA	FAX	NA
Email	pollo@led-ohmax.com	Email	pollo@led-ohmax.com

2.0 Product Description	
Product	Fixed luminaires
Brand name	NA
Description	The products covered by this report are fixed luminaires suitable for dry and damp location.
Models	AL-TU18, AL-TU-18-2, OHHF0001, OHHF0002
Model Similarity	These models have the similar mechanical and electrical construction, differences among them are lampholder quantity, size and total wattage. Model AL-TU18 and AL-TU-18-2 have same construction, only finish color is different.
Ratings	100-277V, 50/60Hz, G13 base AL-TU18, AL-TU-18-2: 18 x Max. 18 W length 1.2mm UL or ETL classified T8 Self-ballasted LED tube; OHHF0001: 6 x Max. 36 W length 1.2mm UL or ETL classified T8 Self-ballasted LED tube; OHHF0002: 8 x Max. 36 W length 1.2mm UL or ETL classified T8 Self-ballasted LED tube
Other Ratings	NA

3.0 Product Photographs

Photo 1 - External view of model AL-TU18

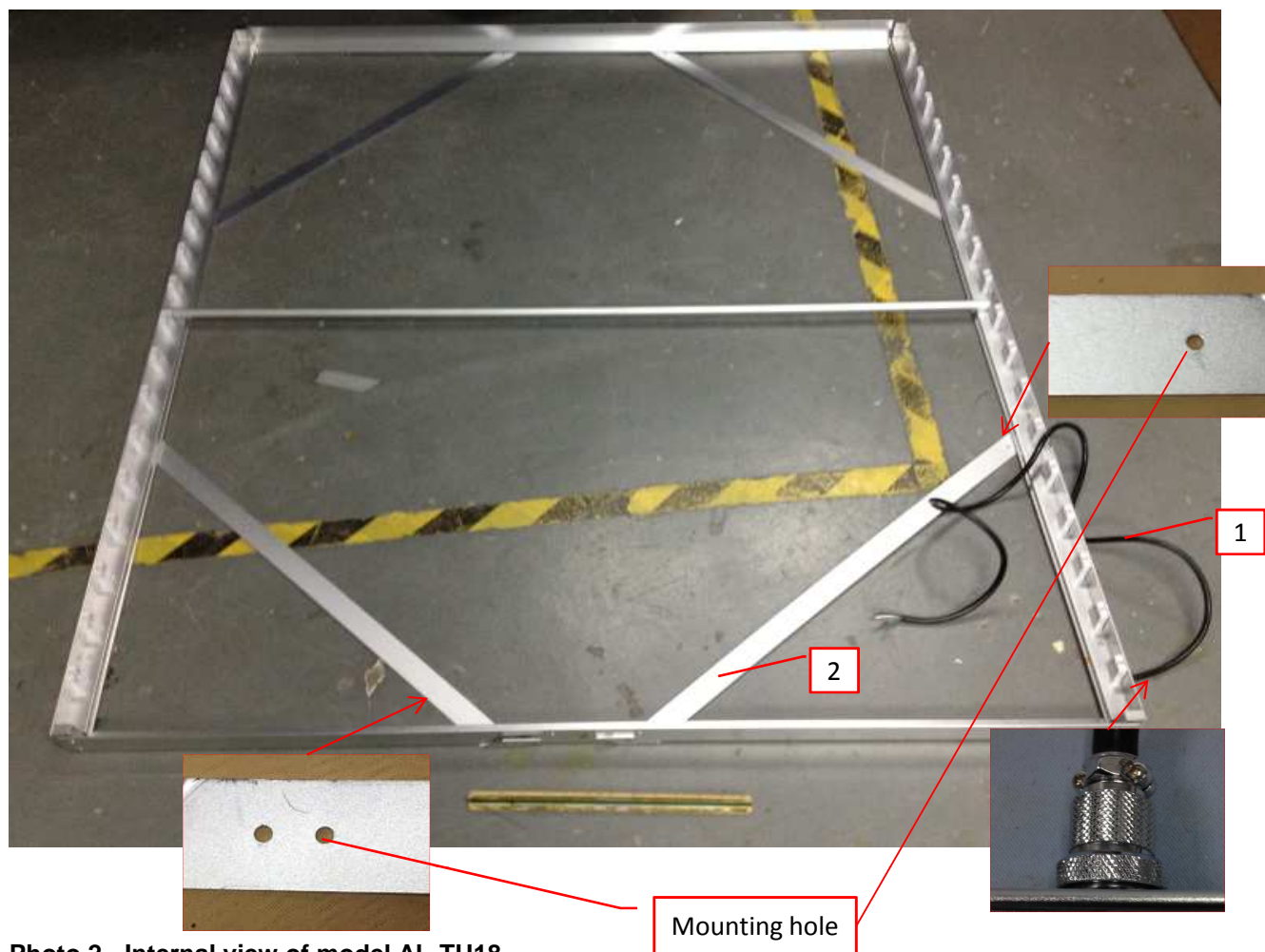
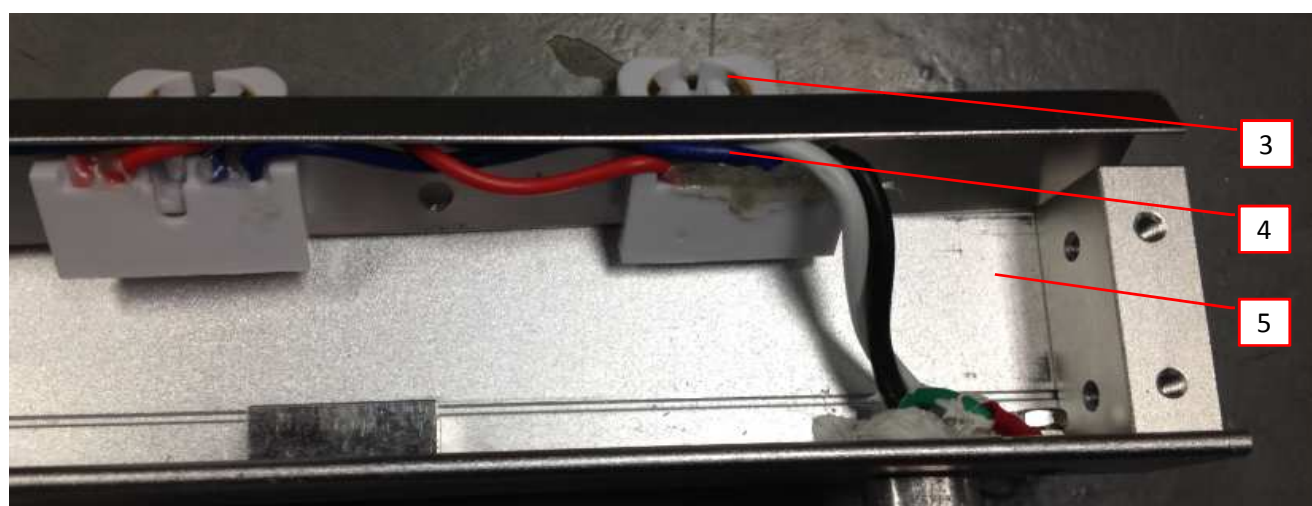


Photo 2 - Internal view of model AL-TU18



Note: Other models have similar external and internal view as model AL-TU18, only lampholder quantity is different.(Refer to sec. 2.0)

4.0 Critical Components						
Photo #	Item no. ¹	Name	Manufacturer/ trademark ²	Type / model ²	Technical data and securement means	Mark(s) of conformity ³
1	1	Power cord	Various	SJTW	3x18AWG 300V, 105°C, VW-1	NR
1	2	Mounting structure	Various	Various	Aluminum sheet, min. thickness 2.05mm	NR
2	3	Lampholder	Various	Various	600V, 660W, G13 base.	cULus
2	4	Lampholder wire	Various	Various	18AWG, 105°C, 600V, AWM, VW-1	cURus
2	5	Enclosure	Various	Various	Aluminum sheet, min. thickness 2.5mm	NR
2	6	T8 Self-ballasted LED tube (not shown)	Various	Various	G13, 100-277V, 50/60Hz, 36W, Max. 0.35A, length 1.2mm	cULus or cETLus
2	7	Label (not shown)	Various	Various	Min. 100°C when attached on metal surface.	URus

NOTES:

- 1) Not all item numbers are indicated (called out) in the photos, as their location is obvious.
- 2) "Various" means any type, from any manufacturer that complies with the "Technical data and securement means" and meets the "Mark(s) of conformity" can be used.
- 3) Indicates specific marks to be verified, which assures the agreed level of surveillance for the component. "NR" - indicates Unlisted and only visual examination is necessary. "See 5.0" indicates Unlisted components or assemblies to be evaluated periodically refer to section 5.0 for details.

5.0 Critical Unlisted CEC Components

No Unlisted CEC components are used in this report.

6.0 Critical Features

Recognized Component - A component part, which has been previously evaluated by an accredited certification body with restrictions and must be evaluated as part of the basic product considering the restrictions as specified by the Conditions of Acceptability.

Listed Component - A component part, which has been previously Listed or Certified by an accredited Certification Organization with no restrictions and is used in the intended application within its ratings.

Unlisted Component - A part that has not been previously evaluated to the appropriate designated component standard. It may also be a Listed or Recognized component that is being used outside of its evaluated Listing or component recognition.

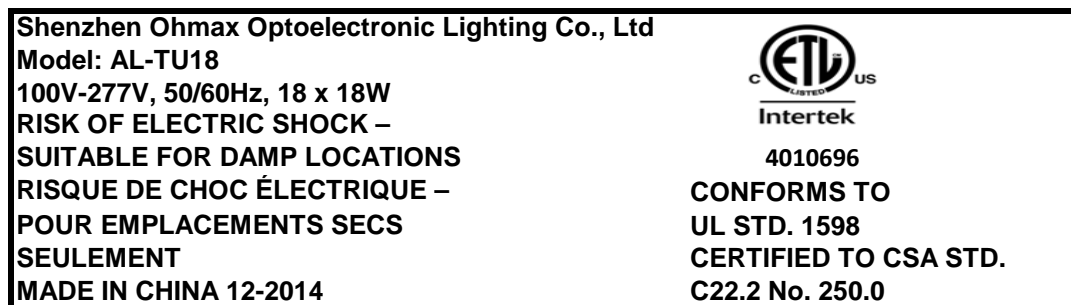
Critical Features/Components - An essential part, material, subassembly, system, software, or accessory of a product that has a direct bearing on the product's conformance to applicable requirements of the product standard.

Construction Details - For specific construction details, reference should be made to the photographs and descriptions. All dimensions are approximate unless specified as exact or within a tolerance. In addition to the specific construction details described in this Report, the following general requirements also apply.

1. Spacing - In primary circuits, 6.4 mm minimum spacing are maintained through air and 9.5 mm minimum spacing are maintained over surfaces of insulating material between current-carrying parts of opposite polarity inside lampholder and dead-metal parts.
2. Mechanical Assembly - Components such as switches, fuseholders, connectors, wiring terminals and display lamps are mounted and prevented from shifting or rotating by the use of lockwashers, starwashers, or other mounting format that prevents turning of the component.
3. Corrosion Protection - All ferrous metal parts are protected against corrosion by painting, plating or the equivalent.
4. Accessibility of Live Parts - All uninsulated live parts in primary circuitry are housed within a metal enclosure constructed with no openings other than those specifically described in Sections 4 and 5.
5. Grounding - All exposed dead-metal parts and all dead-metal parts within the enclosure that are exposed are connected to the grounding lead of the power supply cord.
6. Internal Wiring - Internal wiring is routed away from sharp or moving parts. Internal wiring leads terminating in soldered connections are made mechanically secure prior to soldering. Recognized Component separable (quick disconnect) connectors of the positive detent type, closed loop connectors, or other types specifically described in the text of this report are also acceptable as internal wiring terminals. At points where internal wiring passes through metal walls or partitions, the wiring insulation is protected against abrasion or damage by plastic bushings or grommets. All wiring refer to sec. 4.0.
7. Markings - The product is marked on as labeling system as described in item no. 7 of Section 4.0 as follows:
 - manufacturer's name, trade name or trade mark
 - model number
 - date of manufacture
 - electrical ratings (volts, amperes & frequency)
 - for Canada should be both in English and French
8. Cautionary Markings - The following are required:
 - Refer to Marking page for detail.
9. Installation, Operating and Safety Instructions - Instructions for installation and use of this product are provided by the manufacturer.
Refer to Illustration No(s). 2 for details of Instruction requirements.

7.0 Illustrations

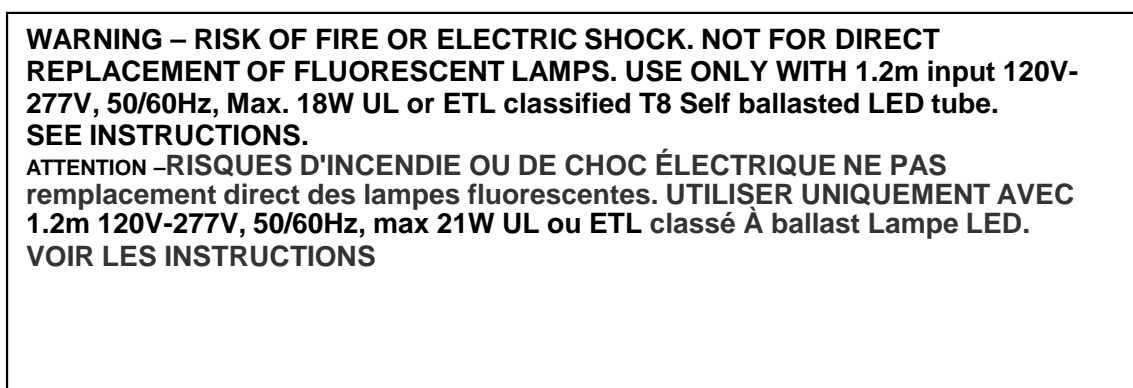
Illustration 1 -Markings



Label A

Label A was attached on the external surface of metal enclosure, ETL logo shall be at least 8 mm high. "C" and "US" should be at least 2mm high. "Intertek" shall be at least 3mm high. The control No. shall be at least 2mm high. Other letters shall be at least 1.6mm high. All models have the same labels A except model no and rating.(refer to sec. 2.0).

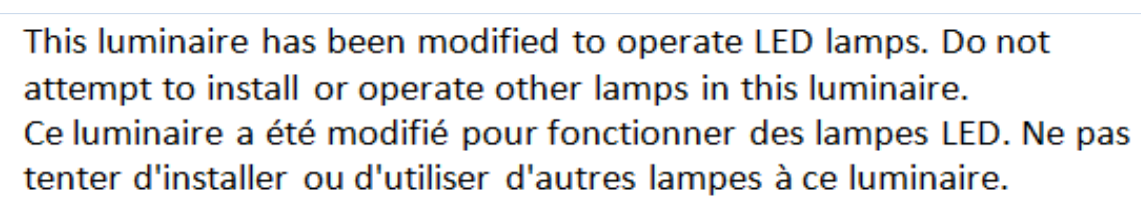
Illustration 1a -Warnings



Label B

Label B was attached near lampholder and visible during lamp replacement. "MAX" or "MAXIMUM" shall be at least 4.8mm high. Other letters shall be at least 2.4mm high for all models.

Illustration 1b -Warnings



Label C

Label C was attached on external surface of metal enclosure and visible during installation. All letters shall be at least 2.4mm high for all models.

7.0 Illustrations

Illustration 2 - Instruction Requirements

The instruction manual shall include the below information:

Proper installation method;

Proper wiring connection method.

Using circumstance;

Other warnings that will not lead to misuse.

Note:

Bilingual English and French instruction shall be provided when export to Canada.

8.0 Test Summary			
Evaluation Period	28-Aug-2014 to 12-Jan-2015		Project No. 140828035GZU
Sample Rec. Date	28-Aug-2014	Condition	Prototype
			Sample ID. S140828035-001~002
Test Location	Intertek Testing Services Shenzhen Ltd. Guangzhou Branch Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD, Guangzhou, China		
Test Procedure	Testing Lab		
Determination of the result includes consideration of measurement uncertainty from the test equipment and methods. The product was tested as indicated below with results in conformance to the relevant test criteria.			
The following tests were performed:			
Test Description	UL1598 (3rd ed., rev. Oct. 17, 2012)/ Clause	CSA C22.2 No.250.0 - 08(rev. Oct. 17, 2012)/ Clause	--
Normal Temperature Test	14	14	--
Loading Test	16.15	16.15	--
Strain Relief Test	16.21	16.21	--
Dielectric Voltage-withstand Test	17.1	17.1	--
Bonding Impedance Test	17.2	17.2	--

8.1 Signatures			
A representative sample of the product covered by this report has been evaluated and found to comply with the applicable requirements of the standards indicated in Section 1.0.			
Completed by:	David Deng	Reviewed by:	Gerry Wu
Title:	Project Engineer	Title:	Senior Supervisor
Signature:	<i>Signature on file</i>	Signature:	<i>Signature on file</i>

9.0 Correlation Page For Multiple Listings

The following products, which are identical to those identified in this report except for model number and Listee name, are authorized to bear the ETL label under provisions of the Intertek Multiple Listing Program.

BASIC LISTEE	Shenzhen Ohmax Optoelectronic Lighting Co., Ltd
Address	No. 132, Fuxing Street, Hehua Community, Pinghu Subdistrict, Longgang District, Shenzhen, Guang Dong
Country	China
Product	Fixed luminaires

MULTIPLE LISTEE 1	None
Address	
Country	
Brand Name	

ASSOCIATED MANUFACTURER	
Address	
Country	

MULTIPLE LISTEE 1 MODELS	BASIC LISTEE MODELS

MULTIPLE LISTEE 2	None
Address	
Country	
Brand Name	

ASSOCIATED MANUFACTURER	
Address	
Country	

MULTIPLE LISTEE 2 MODELS	BASIC LISTEE MODELS

MULTIPLE LISTEE 3	None
Address	
Country	
Brand Name	

ASSOCIATED MANUFACTURER	
Address	
Country	

MULTIPLE LISTEE 3 MODELS	BASIC LISTEE MODELS

10.0 General Information

The Applicant and Manufacturer have agreed to produce, test and label ETL Listed products in accordance with the requirements of this Report. The Manufacturer has also agreed to notify Intertek and to request authorization prior to using alternate parts, components or materials.

COMPONENTS

Components used shall be those itemized in this Intertek report covering the product, including any amendments and/or revisions.

LISTING MARK

The ETL Listing mark applied to the products shall either be separable in form, such as labels purchased from Intertek, or on a product nameplate or other media only as specifically authorized by Intertek. Use of the mark is subject to the control of Intertek.

The mark must include the following four items:

- 1) applicable country identifiers "US" and/or "C" or "US", "C" and "EU"
- 2) the word "Listed" or "Classified" or "Recognized Component" (whichever is appropriate)
- 3) a control number issue by Intertek
- 4) a product descriptor that identifies the standards used for certification. Example:

For US standards, the words, "Conforms to" shall appear with the standard number along with the word, "Standard" or "Std." Example: "Conforms to ANSI/UL Std. XX."

For Canadian standards, the words "Certified to CAN/CSA Standard CXX No. XX." shall be used, or abbreviated, "Cert. to CAN/CSA Std. CXX No. XX."

Can be used together when both standards are used.

Note: A facsimile must be submitted to Intertek, Attn: Follow-up Services for approval prior to use.

The facsimile need not have a control number. A control number will be issued **after signed Certification Agreements** have been received by the Follow-up Services office, approval of the facsimile of your proposed Listing Mark, satisfactory completion of the Listing Report, and scheduling of a factory assessment in your facility.

MANUFACTURING AND PRODUCTION TESTS

Manufacturing and Production Tests shall be performed as required in this Report.

FOLLOW-UP SERVICE

Periodic unannounced audits of the manufacturing facility (and any locations authorized to apply the mark) shall be scheduled by Intertek. An audit report shall be issued after each visit. Special attention will be given to the following:

1. Conformance of the manufactured product to the descriptions in this Report.
2. Conformance of the use of the ETL mark with the requirements of this Report and the Certification Agreement.
3. Manufacturing changes.
4. Performance of specified Manufacturing and Production Tests.

In the event that the Intertek representative identifies non-conformance(s) to any provision of this Report, the Applicant shall take one or more of the following actions:

1. Correct the non-conformance.
2. Remove the ETL Mark from non-conforming product.
3. Contact the issuing product safety evaluation center for instructions.

10.1 Evaluation of Unlisted Components

Because Unlisted Components are uncontrolled, and they do not fall under a third party follow up program, Intertek may require these components to be tested and/or evaluated at least once annually, more often for certain components, as part of the independent certification process. The Unlisted Components in Section 5.0 require testing and/or evaluation as indicated.

Note to Intertek Follow Up Inspector: The Component Evaluation Center, CEC, will notify you in writing when these components must be selected and sent to the CEC for re-evaluation

Ship the samples to:
Intertek Testing Services Shenzhen Limited Guangzhou Branch
ETL Component Evaluation Center
Block E, No. 7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City
CETDD Guangzhou, China.
Attn: Ms. Joey Kuang
Sample Disposition: Due to the destructive nature of the testing, all samples will be discarded at the conclusion of testing unless, the manufacturer specifically requests the return of the samples. The request for return must accompany the initial component shipment.

11.0 Manufacturing and Production Tests

The manufacturer agrees to conduct the following Manufacturing and Production Tests as specified:

Required Tests

Dielectric Voltage Withstand Test,
Grounding Continuity Test

11.1 Dielectric Voltage Withstand Test

Method:

One hundred percent of production of the products covered by this Report shall be subjected to a routine production line dielectric withstand test.

The test shall be conducted on products, which are fully assembled. Prior to applying the test potential, all switches, contractors, relays, etc., should be closed so that all primary circuits are energized by the test potential. If all primary circuits cannot be tested at one time, then separate applications of the test potential shall be made.

The test voltage specified below shall be applied between Primary wiring, including connected components, and accessible dead metal parts of a portable luminaire that are likely to become energized, including those parts that are accessible only during relamping. The test voltage may be gradually increased to the specified value but must be maintained at the specified value for one second or one minute as required.

Test Equipment:

The test equipment shall incorporate a transformer with an essentially sinusoidal output, a means to indicate the applied test potential, and an audible and/or visual indicator of dielectric breakdown.

The test equipment shall incorporate a voltmeter in the output circuit to indicate directly the applied test potential if the rated output of the test equipment is less than 500VA.

If the rated output of the test equipment is 500VA or more, the applied test potential may be indicated by either:

- 1 - a voltmeter in the primary circuit;
- 2 - a selector switch marked to indicate the test potential; or
- 3 - a marking in a readily visible location to indicate the test potential for test equipment having a single test potential output.

In cases 2 and 3, the test equipment shall include a lamp or other visual means to indicate that the test potential is present at the test equipment output.

All test equipment shall be maintained in current calibration.

Test Records:

Test records shall be retained for a period of at least six months, and shall include test quantity, test dates, catalog or model numbers, test results, and disposition of any non-complying products.

Products Requiring Dielectric Voltage Withstand Test:

PRODUCT

All products covered by this report.

<u>Test Voltage</u>	<u>Test Time</u>
1000 VAC or 1414 VDC	60 seconds
Or	
1200 VAC or 1697 VDC	1 second

11.2 Grounding Continuity Test

Method:

Each product provided with a grounding attachment plug of the 3-wire type shall be tested for electrical continuity between the grounding blade of the attachment plug and all conductive parts that are accessible – only those parts that pose a risk of electric shock. Electrical continuity shall be maintained and verified as a routine production-line test.

If all accessible dead metal is connected, only a single test need be performed. A visual or audible device (ohmmeter, buzzer, etc.) may be used to indicate grounding continuity.

Test Equipment:

Test records shall be retained for a period of at six months, and include test quantity, test dates, catalog or model of approximately 12 V providing a current of 25A though the bonding means being evaluated.

Test Records:



Test records shall be retained for a period of at six months, and include test quantity, test dates, catalog or model numbers, test results and disposition of any non-complying products.

Products Requiring Grounding Continuity Test:

All products covered by this Report.

12.0 Revision Summary

The following changes are in compliance with the declaration of Section 8.1:

Date/ Proj # Site ID	Project Handler/ Reviewer	Section	Item	Description of Change
10-Oct-2016	Nico Xie/ 	1.0	--	Added revision date. Revised the description of UL standard from "Luminaires - UL1598 (3rd ed., rev. Oct. 17, 2012)" to "UL 1598 Issued: 2008/09/17 Ed:3 Rev: 2012/10/17 Luminaires". Revised the description of CSA standard from "Luminaires - CSA C22.2 No.250.0 -08(rev. Oct. 17, 2012)" to "CSA C22.2 No. 250.0 Issued: 2008/09/17 Ed: 3 (R2013) Luminaires; Gen. Inst. No. 1: 2010, Gen. Inst. No. 2: 2012".
151230043G ZU	Gerry Wu 	2.0	--	Changed the use location from "dry location" to "suitable for dry and damp location" in the Description column.
			--	Revised the rating of model OHHF0001 and OHHF0002 from "Max. 18 W" to "Max. 36 W".
		4.0	6	Revised the Technical data from "18W, Max. 0.22A" to "36W, Max. 0.35A".
		7.0	1	Changed the use location of Label A from "DRY LOCATIONS ONLY" to "SUITABLE FOR DAMP LOCATIONS" and its French version.
			1a & 1b	Nothing change, rearranged label B and C.
		8.0	--	Added "Signature on file" in the signature column.
12.0	--	Added the revision summary.		