TEST REPORT
UL 1993
Self-Ballasted Lamps and Lamp Adapters

Report Number.....:	ZKT-240411L3641S
Date of issue.....:	Apr. 17, 2024
Total number of pages.....:	26 Pages
Testing Laboratory..... :	**Shenzhen ZKT Technology Co., Ltd.**
Address.....:	1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China
Applicant's name..... :	**SHENZHEN OMI LIGHTING CO., LTD.**
Address.....:	No. 47, 2 Lane, Jinxing 1 Street, Sansha Industrial Zone,Henglan Town,Zhongshan City, Guangdong Province, China
Test specification:	
Standard.....:	UL 1993, Edition 6, Feb.17, 2023（Self-Ballasted Lamps and Lamp Adapters）
Test procedure.....:	UL test report
Non-standard test method.....:	N/A

General disclaimer:

The test results presented in this report relate only to the object tested.

Test Item description	SMART BULB
Trade Mark	N/A
Manufacturer.....	**SHENZHEN OMI LIGHTING CO., LTD.** No. 47, 2 Lane, Jinxing 1 Street, Sansha Industrial Zone,Henglan Town,Zhongshan City, Guangdong Province, China
Model/Type reference	OMI-12SA300, OMI-618SA300, OMI-1824SA300, OMI-9SA300, OMI-7SA300, OMI-6SA300, OMI-12SA300F, OMI-9SA300F, OMI-7SA300F, OMI-6SA300F
Ratings	Input: AC 100-240V~, 50/60Hz, 12W Max

Testing procedure and testing location:

Testing Laboratory.....:	**Shenzhen ZKT Technology Co., Ltd.**
Address.....:	1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China
Date of Test.....:	Apr. 01, 2024 to Apr. 17, 2024
Tested by (name + signature).....:	Peter Huang
Reviewed by (name + signature).....:	Simon Gong
Approved by (name + signature).....:	Awen He

List of Attachments (including a total number of pages in each attachment):
-Appendix 1: Photo attachments.

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
All clauses.	Same as above

Summary of compliance with National Differences:
N/A

☒ **The product fulfils the requirements of** UL 1993 Edition 6.

Remark:
1.The appliances are designed for indoors use. The main use is SMART BULB.
2.All models were identical to the test model except for the model name and power.

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Clause	Requirement + Test	Result - Remark	Verdict
5	**MECHANICAL CONSTRUCTION**		P
5.1	Enclosures		P
5.1.1	Enclosures shall have the strength and rigidity to resist the abuses to which they are subjected, without increasing the risk of fire, electric shock, or injury to persons due to a reduction of the required spacing for live parts or the loosening or displacement of live parts.		P
5.1.2	An enclosure shall be of metal or of a polymeric material		P
5.1.3	A metal enclosure shall comply with the minimum thickness		N/A
5.1.4	An enclosure constructed of iron or steel shall be protected against corrosion by plating, painting, or the equivalent on both inside and outside surfaces.		P
5.2	Openings		P
5.2.1	An enclosure shall not have openings wider than 2 mm		P
5.2.2	The enclosure openings in a lamp adapter shall be evaluated with the lamp removed.		N/A
5.2.3	hole in an enclosure through which wires emerge		N/A
5.3	Polymeric materials		P
5.3.1	polymeric material shall comply with the requirements for portable equipment		P
5.3.2	polymeric material used to enclose electrical parts shall have a Relative Thermal Index		P
5.3.3	A polymeric material used as an enclosure shall have a flammability rating of 5-VA, 5-VB, or V-0 in accordance with UL 94		P
5.3.4	A polymeric material used as an enclosure of a device marked for wet location use shall comply with the ultraviolet light exposure test		P
5.3.5	With respect to UL 746C, the following tests are not required to be conducted		P
5.3.6	A device shall comply with the mold-stress relief distortion test of Clause 8.9		P
5.3.7	A polymeric material used for direct support as electrical insulation shall be able to withstand the hot wire ignition		P
5.4	Weight and moment		P
5.4.1	A device shall have weight and moment limitations as specified in Table 5.3		P
5.4.2	A device that is constructed so that the		P

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Clause	Requirement + Test	Result - Remark	Verdict
	alignment with the existing incandescent luminaire or portable luminaire requires an adjustment greater than ±20 degrees shall be provided with adjustment of the device base with relation to the remainder of the device.		
5.4.3	A device intended to be used with a shade, glassware, or diffuser shall be provided with that accessory.		P
5.4.4	A lamp adapter shall be provided with a positive means to retain the lamp or lamps in place in any possible mounting orientation, such as by clips, retaining springs, or the equivalent.		P
5.4.5	When the integrity of the lamp securing means of a lamp adapter cannot be determined, the device lampholder shall comply with the minimum retention force values		P
6	**ELECTRICAL CONSTRUCTION**		P
6.1	Lamp bases and lampholders		P
6.1.1	A device lampholder and device base shall comply with the requirements of CSA C22.2 No. 43 and UL 496		P
6.1.2	A screwshell metal of a device base intended for damp or wet locations shall be made from		N/A
6.1..3	a device lampholder of a fluorescent lamp adapter shall be tested with the lamp or lamps that the device is intended to accommodate		N/A
6.1.4	A device which does not comply with Clause 6.1.3 shall comply with the lamp starting and operating measurements of Clause 8.3.		P
6.2	Current-carrying parts		P
6.2.1	A wire shall have insulation rated for the voltage, temperature, and conditions of intended use.		P
6.2.2	Where loosening or breaking of electrical connections involves a risk of fire or electric shock, the connections shall be soldered, welded, or otherwise securely connected		P
6.2.3	A wire is considered to be mechanically secure when one or more of the following		P
6.2.4	Iron or steel, plain or plated, shall not be used for current-carrying parts unless it is a wire integral to the lamp light source or parts used for the containment of electromagnetic or electrostatic fields		P
6.2.5	With respect to Clause 6.2.4, stainless-steel is acceptable to be used for current carrying parts		P
6.2.6	An uninsulated live part shall be permanently		P

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	mounted and secured in accordance with Clause 6.2.3 to reduce the likelihood of turning or shifting position if such motion can result in a reduction of spacings below minimum acceptable values		
6.2.7	An accessible wire between a lamp connector for a circular lamp		P
6.3	Printed circuit boards		P
6.3.1	printed circuit wiring is considered part of the ballast, and shall comply with UL 935		P
6.4	Ballasts and LED drivers		P
6.4.1	a ballast for fluorescent lamps shall comply with the requirements of UL 935 and have Class P thermal protection		N/A
6.4.2	A ballast not previously investigated as described in Clause 6.4.1 shall be evaluated in the device.		N/A
6.4.3	A ballast for fluorescent lamps shall be subjected to the following tests		N/A
6.4.4	Regarding the fault condition testing specified in Clause 6.4.3 (b), the following fault conditions shall be introduced, one at a time – not necessarily in the order indicated		P
6.4.5	A fusing resistor used for thermal protection shall comply with UL 1412 or the requirements of CAN/CSA-C22.2 No. 60065-03 (R2008) or the requirements of NMX-J-578-ANCE		P
6.4.6	A printed wiring board trace intended to open as a result of an abnormal condition is not permitted.		P
6.4.7	a magnetic coil operating above Class 105 temperature limits shall have an insulation system complying with UL 1446		P
6.4.8	Drivers for light-emitting diodes (LEDs) vary in complexity from simple to complex circuits		P
6.5	Power capacitors		P
6.5.1	a power capacitor shall comply with the applicable requirements specified in UL 935.		P
6.6	Spacing of electrical parts		P
6.6.1	For other than on a printed wiring board, the spacing of electrical parts through air (clearance) and over the surface of insulating material (creepage distance) shall be at least as described in Clauses 6.6.2 and 6.6.3		P
6.6.2	Alternate spacing requirements may be applied as specified in Clauses 6.6.5 to 6.6.7		P

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6.6.3	A spacing described in Clause 6.6.1 shall not be less than the values specified in Table 6.1		P
6.6.4	For a printed wiring board, the spacing of electrical parts for the ballast shall comply with the requirements of UL 935 or CSA C22.2 No. 74 as applicable		P
6.6.5	as an alternative to the spacing requirements specified in Clauses 6.6.2 to 6.6.4, the clearance and the creepage distance between conductive parts that are rigidly held in place and reliably spaced in production may be evaluated for compliance with UL 840		P
6.6.6	when applying the requirements specified in UL 840 to determine clearances, the device may be considered as operating on a supply circuit having an over-voltage of Category II		P
6.6.7	when applying the requirements specified in UL 840 to determine environmental pollution, the device may be evaluated with different environmental pollution degrees		P
6.7	Accessibility of live parts		P
6.7.1	Accessibility of hazardous live parts shall be determined when the articulated probe of Clause 9.6 is inserted through any opening without contacting any hazardous live parts.		P
6.7.2	The articulated probe of Clause 9.6 shall not contact any bare live parts of the lampholder contacts of a fluorescent adapter with the lamp removed.		P
6.7.3	A non-current-carrying metal part, such as the head of a screw or rivet, is not considered to be exposed to contact if it is recessed to clear the surface by at least 5 mm (0.197 in) in a hole not more than 7 mm (0.275 in) in diameter.		P
6.8	Light source – fluorescent lamps		N/A
6.8.1	Fluorescent discharge lamps shall be tested to simulate end-of-lamp-life conditions		N/A
6.9	Light source – light emitting diodes (LED)		P
6.9.1	Light-emitting diodes (LEDs) emitting coherent light shall not be used		P
6.9.2	LEDs used in the subject screw-base lamps shall not be user replaceable		P
6.9.3	LEDs used in the subject screw-base lamps shall not be provided with shunt devices that would handle the current in the event the LEDs had open-circuited		P
6.10	Light source – non-discharge lamps		N/A

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6.10.1	Adapters with a lamp containment barrier and employing replaceable tungsten halogen lamps shall be marked with a lamp caution in accordance with Table 10.1, Items 8 and 17		N/A
6.10.2	Adapters employing replaceable tungsten halogen lamps where the lamp has an integral containment barrier shall be marked with a maximum lamp caution in accordance with Table 10.1, Items 8 and 16.		P
6.10.3	Adapters complying with Clause 6.10.1 or Clause 6.10.2 may be marked indicating the lamp is suitable for use in an open type luminaire in accordance with Table 10.1, Item 18.		P
7	**ENVIRONMENTAL LOCATIONS**		P
7.1	Dry locations		P
7.1.1	A device intended for use only in dry locations shall be marked in accordance with Table 10.1, Item 9.		P
7.1.2	The device or packaging of a device intended for use in dry locations shall not be marked in any manner that could imply or depict that it is suitable for a damp or wet use location.		P
7.2	Damp locations		N/A
7.2.1	A device intended for use in damp locations and marked in accordance with Table 10.1		N/A
7.3	Wet locations		N/A
7.3.1	A device intended for use in wet locations and marked in accordance with Table 10.1		N/A
8	**TESTS**		P
8.1	General		P
8.1.1	Compliance with this standard is checked by conducting the tests specified and appropriate for the product		P
8.1.2	Tests described in this section use instrumentation, apparatus, and environmental conditions that are described in Clause 9.		P
8.1.3	Manufacturing and production tests shall be carried out in accordance with Annex D		P
8.1.4	The tests shall be conducted on samples as specified in Table 8.1		P
8.1.5	All tests shall be conducted with the device connected to a supply circuit of rated frequency.		P
8.1.6	A device rated 50 – 60 Hz need only be tested at 60 Hz unless testing at 50 Hz represents a more		N/A

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	severe condition		
8.1.7	Prior to taking the measurements required by Clauses 8.2 to 8.4, it will in some cases be necessary to take preliminary measurements using an oscilloscope to determine the nature of the available currents. An AC/DC meter shall be used for measuring DC.		P
8.1.8	A device with discharge lamp or lamps shall be aged for 100 hours while connected to a supply of nominal rated voltage, and then all lamp types being tested shall be connected to a regulated source of supply at rated voltage and operated for 30 minutes prior to conducting the input measurements test of Clause 8.2.		P
8.1.9	Where more than one fluorescent lamp has a common base, for example a G-23 base for 5-, 7-, and 9-W twin tube lamps, and a G-24q-1 base for 10- and 13-W quad lamps, tests on lamp adapters shall be conducted with the lamps that will result in the most severe condition.		P
8.2	Input measurements		P
8.2.1	With the ballast energized at the input voltage and frequency in accordance with Clauses 8.1.5, 8.1.6, and 8.1.8, the input current shall not be more than 110 percent of the marked rating		P
8.2.2	For devices intended for use on a dimmer circuit, the input current measured during the test of Clause 8.12.2.1 shall not be more than 110 percent of the marked rating.		P
8.2.3	For a device with a marked power factor rating, the power factor (PF) shall be calculated using the following formula		P
8.3	Lamp starting and operating measurements		P
8.3.1	amp adapters with the lamp adapter energized at the input voltage and frequency as specified in Clauses 8.1.5 and 8.1.6		P
8.4	Leakage-current test		P
	A device with an exposed non-current-carrying metal part shall comply with the leakage current requirements in UL 935		P
8.5	Temperature test		P
8.5.1	A device shall be tested as described in Clauses 8.5.2 to 8.5.13.		P
8.5.2	The maximum temperatures shall not exceed those specified in Table 8.2 when corrected to a room ambient temperature of 25 ±5 °C		P
8.5.4	The normal temperature test shall be conducted with the device energized in accordance with		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Clause 8.1.5.		
8.5.5	A device that is not marked in accordance with Table 10.1, Item 13, shall comply with the dimmer tests of Clause 8.12.		P
8.5.6	A device that is not designed for use in a totally enclosed luminaire, and that is marked in accordance with Table 10.1, Item 15, shall be subjected to the normal temperature test with the device mounted base-up in the test fixture as shown in Figure 9.1 and with the bottom open.		P
8.5.7	A lamp adapter that can accommodate various lamp types and wattages shall be tested with the lamp that will result in the most severe temperatures		P
8.5.8	The test shall be continued until constant temperatures are obtained.		P
8.5.9	Thermocouples shall comply with Clause 9.3.		P
8.5.10	A thermocouple junction and the adjacent thermocouple lead wire shall be securely held in thermal contact with the surface of the material of which the temperature is being measured		P
8.5.11	The temperature of a winding shall be measured by a thermocouple or by the rise of resistance method in accordance with Clause 8.5.12		P
8.5.12	The temperature of a winding shall be calculated		P
8.5.13	As it is generally necessary to de-energize the winding before measuring R, the value of R at the end of the test may be determined by taking several resistance measurements at short intervals, beginning as quickly as possible after the instant of shutdown		P
8.6	Dielectric voltage-withstand test		P
8.6.1	A device with accessible non-current-carrying metal parts that could be energized from within shall withstand for 1 minute, without breakdown, the application of a test potential of twice the rated voltage + 1000 V between all live parts and all accessible non-current-carrying metal parts.		P
8.6.2	A device with accessible nonmetallic parts and openings in the enclosure shall withstand for 1 minute, without breakdown, the application of a test potential of 2500 V between live parts and metal foil in contact with accessible nonmetallic parts		P
8.6.3	The dielectric voltage-withstand test shall be conducted using test equipment having a 500 VA or larger transformer, the output voltage of which can be varied. The applied potential shall be increased from zero until the required test		P

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Clause	Requirement + Test	Result - Remark	Verdict
	value is reached, and shall be held at that value for 1 minute.		
8.6.4	The sensitivity of the test equipment shall be such that when a 120,000 ohms minimum calibrating resistor is connected across the output, the equipment indicates acceptable performance for any output voltage less than the specified test voltage, and indicates unacceptable performance for any output voltage equal to or greater than the specified test voltage.		P
8.7	Harmonic distortion test		P
8.7.1	A device rated for a harmonic factor (HF) or total harmonic distortion (THD) of the supply current shall be tested as described in Clause 8.7.2 and 8.7.3		P
8.7.2	The supply for the test shall be generated by an electronic power supply having a voltage distortion of less 0.5 percent		P
8.7.3	The magnitude of the various harmonics of the supply frequency shall be recorded to the thirty-third (33) harmonic		P
8.8	Drop impact test		P
8.8.1	A device with a polymeric enclosure shall be subjected to the tests described in Clauses 8.8.2 and 8.8.3.		P
8.8.2	A device shall be subjected to the impact test		P
8.8.3	A device having accessible non-current-carrying metal parts that could be energized from within shall subsequently be subjected to the dielectric voltage-withstand test of Clause 8.6.		P
8.8.4	Accessibility criteria are not applied to broken discharge tubes.		N/A
8.9	Mold-stress relief conditioning		P
8.9.1	A completely assembled device having a polymeric enclosure shall be placed in a circulating air oven and maintained at a temperature 10 °C higher than maximum temperature taken during the normal temperature test of Clause 8.5 when tested in a recessed luminaire, or not less than 70 °C for a period of 7 hours.		P
8.9.2	For a family or grouping of enclosures, such as different sizes for a range of lamp wattages, representative samples of the largest and the smallest enclosures shall be tested		P
8.9.3	After conditioning, there shall be no softening of the material as determined by handling immediately after the conditioning, nor shall		P

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Clause	Requirement + Test	Result - Remark	Verdict
	there be shrinkage, warpage, or other distortion as judged after cooling to room temperature		
8.10	Deflection test		P
8.10.1	The enclosure of a device shall be capable of withstanding a force of 89 N (20.0 lbf) applied using a 12 mm (0.472 in) diameter rod with a hemispherical end.		P
8.10.2	This test is applicable only for devices having enclosures consisting of two molded pieces that snap together		P
8.10.3	The force shall be gradually increased from zero until the specified value is reached and then maintained for a period of one minute. The force, when applied along a joint of snap-together parts or to any part of the enclosure, shall not result in a shock hazard or damage that can create a fire hazard.		P
8.11	Strain relief test for lamp connectors		P
8.11.1	The lamp lead wires that exit the enclosure of a circular fluorescent device shall be subjected to a perpendicular force of 22 N (5 lbs) applied to each lead wire for 1 min		P
8.11.2	The lamp leads exiting from the enclosure shall have no movement of any lead greater than 1.6 mm (1/16 in) after the force of Clause 8.11.1 is applied.		P
8.12	Tests of dimmer circuits		P
8.12.1	General		P
8.12.1.1	A device that is intended to operate on a standard dimmer, shall be subjected to the normal operation test specified in Clause 8.12.2.		P
8.12.1.2	A device that is not intended to be dimmable, shall be subjected to the abnormal temperature test of Clause 8.12.3. These devices shall be marked in accordance with Table 10.1, item 13.		P
8.12.1.3	A dimmable device that is not intended to operate on a standard dimmer (e.g.: wireless control) shall be subjected to the abnormal temperature test of Clause 8.12.3 with its integral dimming control set for full brightness.		P
8.12.2	Normal operation test		P
8.12.2.1	Devices described in Clause 8.12.1.1 shall comply with the temperature test of Clause 8.5 when operated with power supply sources of Clauses 8.12.4 and 8.12.5.		P
8.12.3	Abnormal test		P
8.12.3.1	Devices described in Clauses 8.12.1.2 or 8.12.1.3 shall be energized with the sources of		P

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Clause	Requirement + Test	Result - Remark	Verdict
	supply specified in Clauses 8.12.4 and 8.12.5, in a room ambient of 25 °C in the base down position.		
8.12.3.2	When operated as specified in Clause 8.12.3.1 for 7½ hours		P
8.12.4	Half-wave rectified supply		P
8.12.4.1	A source of supply as specified in Clauses 8.1.5 and 8.1.6 shall be operated with a single, appropriately rated semiconductor diode in series with the ungrounded conductor of the supply.		P
8.12.5	Adjustable dimmer supply		N/A
8.12.5.1	A source of supply as specified in Clause 8.1.5 shall be operated with an adjustable dimmer electrically wired in series		N/A
8.13	Humidity conditioning		P
8.13.1	A device intended for use in damp or wet locations (see Clauses 7.2 and 7.3) shall be exposed for 48 hours to moist air having a relative humidity of 93 ±5 % at a temperature of 25 ±2 °C		P
8.14	Water spray test		P
8.14.1	A device intended for use in wet locations (see Clause 7.3) shall be subjected to the test described in Clause 8.14.2		P
8.14.2	A device shall be tested by applying a water spray as described in Clause 9.7 for 1 hour		P
8.15	Cold impact test		P
8.15.1	A device with a polymeric enclosure and marked for use in wet locations shall comply with the cold impact test (-35 °C)		P
8.15.2	Three samples shall be cooled to a temperature of -35 ±2 °C and maintained at this temperature for 3 hours. While the unit is cold, the specimens shall be subject to the drop test described in drop test in Clause 8.8.		P
8.16	Lamp fault conditions test		P
8.16.1	A self-ballasted lamp or adapter that employs an electronic ballast shall accept the following fault conditions specified, introduced one at a time, without increasing the risk of fire or shock:		P
8.16.2	The fault conditions specified in Clause 8.16.1 shall be simulated as follows:		P
8.16.3	A self-ballasted lamp or adapter shall be placed on a knot-free pine board covered with a double layer of cheesecloth. A double layer of cheesecloth shall be draped over the unit.		P

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8.16.4	The self-ballasted lamp or adapter shall be energized from a power supply of rated voltage and frequency.		P
8.16.5	The results of the test comply with this standard		P
8.17	End-of-lamp-life tests for fluorescent lamp adapters		P
8.17.1	General		P
8.17.1.1	Any one of the following three tests may be used to qualify a lamp adapter		P
8.17.1.2	The manufacturer shall declare which one of the three tests will be used to test a given adapter, based on the design of that particular adapter circuit.		P
8.17.1.3	Lamps used in the adapter test circuits shall be new lamps seasoned for 100 h		P
8.17.2	Asymmetric pulse test		P
8.17.2.1	Refer to the schematic diagram in Figure 8.3.		P
8.17.2.2	The following values of maximum cathode power Pmax apply		P
8.17.2.3	If only one connection per electrode is available at the ballast and/or lamp, T1 shall be removed, and then the ballast shall be connected to J2 and the lamp to J4		P
8.17.2.4	The following components are used in the asymmetric pulse test circuit		P
8.17.2.5	he specification for the transformer (T1) listed in Clause 8.17.2.4		P
8.17.3	Asymmetric power test		P
8.17.3.1	Refer to the schematic diagram in Figure 8.4		P
8.17.3.2	The test sequence shall be as follows		P
8.17.3.3	The following components are used in the asymmetric power test		P
8.17.4	Open filament test		P
8.17.4.1	Test selection		P
8.17.4.1.1	The adapter shall have adequate protection to prevent lamp base overheating at the end of the lamp life cycle under open filament conditions. Compliance is checked by either test procedure A or B as determined by the value of Imax below.		P
8.17.4.1.3	If these current values are exceeded, test procedure B shall be applied; otherwise test procedure A shall be applied.		P
8.17.4.2	Measurements to be carried out prior to test		P

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	procedure A		
8.17.4.2.1	Connect the circuit according to Figure 8.5.		P
8.17.4.2.2	Determine the rms currents ILL(1), ILH(1), ILL(2), and ILH(2) at the adapter output terminals, by using a current probe, and mark the terminals respectively		P
8.17.4.3	Test procedure A		P
8.17.4.3.1	The test sequence shall be as follows a-k		P
8.17.4.3.2	The following components are used in the open filament test circuit for test procedure A, electrode (1)		P
8.17.4.4	Test procedure B		N/A
8.17.4.4.1	Connect the lamp as shown in Figures 8.5 and 8.6 with the measurement arrangement according to Figure 8.7		N/A
8.17.4.4.2	The test sequence shall be as follows a-h		N/A
8.17.4.4.3	The following components are used in the open filament test circuit for test procedure B, the detection of lamp current		N/A
8.18	End-of-life test for integral, self-ballasted fluorescent lamps – one filament emission-mix-free test		N/A
8.18.1	A self-ballasted lamp shall be tested as described in Clauses 8.18.2 to 8.18.5.		N/A
8.18.2	Six samples shall be used for the test. Three of the samples shall have no emission-mix on one lamp filament and the other three samples shall have no emission-mix on the other lamp filament.		N/A
8.18.3	During the test, the device shall be energized at the input voltage and frequency. The device shall be oriented base up unless the packaging clearly indicates the bulb is not to be operated in this orientation. The samples may be operated in an open environment.		N/A
8.18.4	The samples shall be observed during the test for any evidence of smoke, fire, or cracking of the bulb wall.		N/A
8.18.5	The results of the test comply with this standard		N/A
8.19	15-VA available power measurement test		P
8.19.1	When evaluated per Clauses 8.19.2 – 8.19.7, the power available to a circuit is not considered to be a risk of fire if the maximum power available to the circuit is less than 15 VA under any loading condition, including short circuit, measured after one minute of operation.		P

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8.19.2	The point in the circuit under evaluation shall be connected to the measurement circuit as shown in Figure 8.8 The external adjustable load resistor shall be initially set for its maximum resistance		P
8.19.3	If the supply to circuit under evaluation consists of other than a single resistor, the test described in Clause 8.19.2 shall be repeated under any single component fault conditions within the supply circuit likely to result in greater output power availability. The fault condition shall first be applied, and then the variable resistance load shall be adjusted as needed.		P
8.19.4	With respect to Clause 8.19.3, components for which the reliability against failure has been deemed acceptable by a separate evaluation shall not be faulted. Examples of such components include optical isolators evaluated to CSA Component Acceptance Service No. 5 or UL 1577; and capacitors evaluated to CAN/CSA-E60384-14 or UL 60384-14.		N/A
8.19.5	If the test is disrupted by the operation of a suitable protective component		P
8.19.6	If the test is disrupted by the failure of other circuit components (e.g.: capacitor, semiconductor, coil winding) then that test shall be repeated two additional times, with new samples, under the same test condition. Test disruption by opening of the same, or a different, component during these repeated tests is acceptable.		P
8.19.7	If there is any indication of component overheating during any of the tests described in Clauses 8.19.2 – 8.19.6 (e.g.: odor, smoke, discoloration, glowing, cracking, melting, or changes in circuit current through the fault), the test condition shall be repeated as part of either the Fault-Condition Test		N/A
9	**TEST APPARATUS**		P
9.1	General		P
9.1.1	Clause 9.1 summarizes test equipment and environmental conditions needed for the laboratory facility where testing would be conducted.		P
9.1.2	Unless otherwise specified, the tests shall be carried out at an ambient temperature of 20 °C to 30 °C with a relative humidity between 30 and 70%. Atmospheric pressure is not specified.		P
9.1.3	Test equipment shall be in a schedule of initial		P

UL 1993			
Clause	Requirement + Test	Result - Remark	Verdict
	calibration and periodic re-calibration		
9.1.4	Test equipment shall have a method of specific identification, such as serial number or a unique laboratory numbering system, so that the equipment used for the test may be noted in the results of the test.		P
9.2	Instrumentation		P
9.2.1	The voltage in other than the supply circuit shall be measured using a voltmeter or voltmeter-multiplier combination having a resistance of not less than 10,000 Ω/V.		P
9.2.2	For determining values of voltage, a true rms indicating meter having a frequency response at least three times the frequency involved and having an adequate crest factor (ratio of peak to rms) shall be used.		P
9.2.3	If it is necessary to determine peak-voltage value, an oscilloscope with a high-impedance (10 MΩ minimum) input probe shall be used.		P
9.2.4	For thermocouple measurements, either a thermocouple potentiometer or an electronic instrument shall be used. An electronic instrument shall have an accuracy at least as good as the thermocouples described in Clause 9.3.		P
9.3	Thermocouples		P
9.3.1	Thermocouples shall consist of wires not larger than 24 AWG (0.21 mm2) and not smaller than 30 AWG (0.05 mm2). It is standard practice to employ thermocouples consisting of 30 AWG iron-constantan (Type J) wires and a potentiometer-type or electronic instrument; and such equipment shall be used whenever referee temperature measurements by thermocouples are necessary		P
9.3.2	Thermocouples consisting of chromel-alumel (Type K) or copper-constantan (Type T) wires may be used if it is determined that high-frequency ballast operation results in eddy current heating of iron-constantan thermocouples.		P
9.4	Plywood test box material		P
9.4.1	The plywood used for constructing temperature test boxes shall be 12-mm (1/2-in trade size) thick with at least one side that has all voids filled and sanded.		P
9.5	Temperature test box		P
9.5.1	Test apparatus for a device with an input rating less than 50 W		P

UL 1993			
Clause	Requirement + Test	Result - Remark	Verdict
9.5.2	Test apparatus for a device with an input rating greater than 50 W for an enclosed lamp compartment		P
9.5.2.1	The device shall be tested in the enclosed test fixture described below for the normal temperature test. The sides and top of the test fixture shall be constructed of 12.7 mm (1/2 in trade size) thick minimum grade C-D or better plywood. The bottom shall be closed off with a 2.5 mm (0.1 in) thick piece of window glass of appropriate size.		P
9.5.2.2	The test fixture shall have a square cross-section. The dimensions of the sides of the square shall be specified by the self-ballasted lamp manufacturer and marked on the self-ballasted lamp.		P
9.5.2.3	A lampholder shall be mounted to the inside top of the center of the box and 0.82 mm2 (18 AWG) insulated conductors of suitable temperature and voltage rating supply power shall be connected to it		P
9.5.3	Normal temperature test apparatus for a device with an input rating greater than 50 W for an open luminaire		P
9.5.3.1	The temperature test apparatus shown in Figure 9.2 shall be constructed as a-g		P
9.6	Articulated probe		P
9.6.1	See Figure 9.3 for articulated test probe specifications		P
9.7	Water spray apparatus		N/A
9.7.1	The water spray test apparatus shall consist of three spray heads constructed in accordance with the details specified in Figure 9.4 and mounted in a water supply pipe rack as illustrated in Figure 9.5.		N/A
9.8	Cheesecloth		P
9.8.1	The cheesecloth shall be bleached cheesecloth, 914 mm (36 in) wide, running 26 to 28 m2/kg (14 to 15 yd2/lb) and having what is known in trade as a count 32 by 28.		P
10	**DEVICE MARKINGS**		P
10.1	General		P
10.1.1	A device shall be legibly marked using one or more of the following methods a-k		P
10.1.2	A pictogram in accordance with Annex F may be used as a substitute for the corresponding text of Table 10.1 and shall be the subject of special		P

UL 1993			
Clause	Requirement + Test	Result - Remark	Verdict
	inspection.		
10.1.3	A marking shall be of the minimum size (S____) and in the location (L____) shown in the "Format" column of Table 10.1 and as defined in Tables 10.2 and 10.3.		P
10.1.4	"Verbatim" in the "Text" column of Table 10.1 indicates that the marking shall consist of only the exact words shown or a marking including these words and conveying the original intent. Alternative wording for other markings in the table may be used subject to evaluation.		P
10.1.5	All markings shall have lettering in which		P
10.1.6	Pressure-sensitive labels of the permanent type (Type P) that are secured by adhesive shall be in accordance with CSA C22.2 No. 0.15 or UL 969. The adhesive of the pressure-sensitive labels shall be suitable for the application surface, temperature, and environment.		P
10.2	Identifications and ratings		P
10.2.1	A device shall be marked with the following a-d		P
10.2.2	A device shall be marked with an electrical input rating in volts, hertz, wattage, and current in accordance with Table 10.1, Item 5. Hertz can be omitted if volts is expressed as "VAC" and the device has been evaluated for 60 Hertz, or if volts is expressed as "VDC."		P
10.2.3	A lamp adapter shall be marked with a wattage rating as specified in Table 10.1		N/A
10.2.4	A device with a power factor rating greater than 0.90 may be marked in accordance with Table 10.1,		N/A
10.2.5	Unless the device is tested with the lens as described in Clause 8.5.6, the device shall be marked in accordance with Table 10.1, Item 15.		P
10.2.6	In the United States, self-ballasted fluorescent lamps shall be marked as described in Table 10.1, Item(s) 19, 20 or both. The smallest unit packaging, point-of-sale package, carton, or "stuffer sheet" packed with a lamp shall contain the marking described in Table 10.1, Item(s) 29, 30 or both.		P
10.2.7	When a marking in Table 10.1 has a corresponding symbol in Annex F and instructions are included on the packaging explaining the pictogram's meaning, the symbol may be used in place of the corresponding text in Table 10.1.		P
10.3	Marking requirements in Mexico		N/A
10.4	Instructions		P

UL 1993			
Clause	Requirement + Test	Result - Remark	Verdict
10.4.1	A device weighing over 200 g (0.44 lbs) shall be provided with instructions in accordance with Table 10.1, Items 21 and 22.		P
10.4.2	device, typically not intended for use in free-standing portable luminaires, such as a PAR- or R-shaped bulb, is not required to comply with Clause 10.4.1		P
10.4.3	A device employing a lamp, such as a circular lamp, that extends outside of the harp of a portable luminaire shall be provided with an instruction in accordance with Table 10.1, Item 23, or shall be marked as required by Clause 10.4.1.		P
10.4.4	The instructions shall include the statement in Table 10.1, Item 24.		P
10.4.5	The instructions for a device marked in accordance with Table 10.1, Item 14, shall include the following or equivalent statement: ″Only use the control provided with or specified by these instructions to control this lamp. This lamp will not operate properly when connected to a standard (incandescent) dimmer or dimming control.″		P

MECHANICAL STRENGTH OF SCREWSHELLAND SCREW BASE (CONT'D):

Model Number	Sample Number	Acceptable Results (Y/N)?	
		Pull	Torsion
OMI-12SA300	S01	Y	Y

DIELECTRIC VOLTAGE-WITHSTAND TEST

PWB Test Points		Measured Potential (Vp)	DC Test Potential (2Vp+1000)	PWB Test Points		Measured Potential (Vp)	DC Test Potential (2Vp+1000)
--	1	200	1400	--	11	--	--
--	2	200	1400	--	12	--	--
--	3	200	1400	--	13	--	--

INPUT MEASUREMENTS

Model Number	Electrical Measurements			
	(V)	(Hz)	(A)	(W)
OMI-12SA300	120	60	0.098	11.80

LEAKAGE CURRENT TEST

Model Number (Sample No.)	Test Sequence and Input Polarity (MIU)							
	Step b (OFF, Cold)		Step c (ON, Cold)		Step d (ON, Warm)		Step e (OFF, Warm)	
	A	B	A	B	A	B	A	B
OMI-12SA300	0.02	0.01	0.02	0.02	0.02	0.02	0.02	0.01

TEMPERATURE TEST

Thermocouple locations	TEST Voltage			--	Limit (ºC)
	108V	132V	--		
Ambient	24.2	24.4	--	--	--
Plastic enclosure inside near LED	46.8	44.1	--	--	115
Plastic enclosure outside near LED	35.5	34.7	--	--	115
Input Leads near L	43.9	41.0	--	--	125
PCB near U1	64.2	61.8	--	--	130
C1 body	48.3	46.9	--	--	105
C2 body	50.6	47.2	--	--	105

LED LAMP AND DRIVER ABNORMAL CONDITION TESTS(ABNORMAL TESTS)

Model Number	Description Of Fault1	Test Observations
OMI-12SA300	U1(Pin1-4) short	Fuse Opened, No visible defects on the enclosure.
	U1(Pin2-3) short	Fuse Opened, No visible defects on the enclosure.
	C1 short	Unit shut down, Recoverable, No visible defects on the enclosure.

-Appendix 1: Photo document.



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5

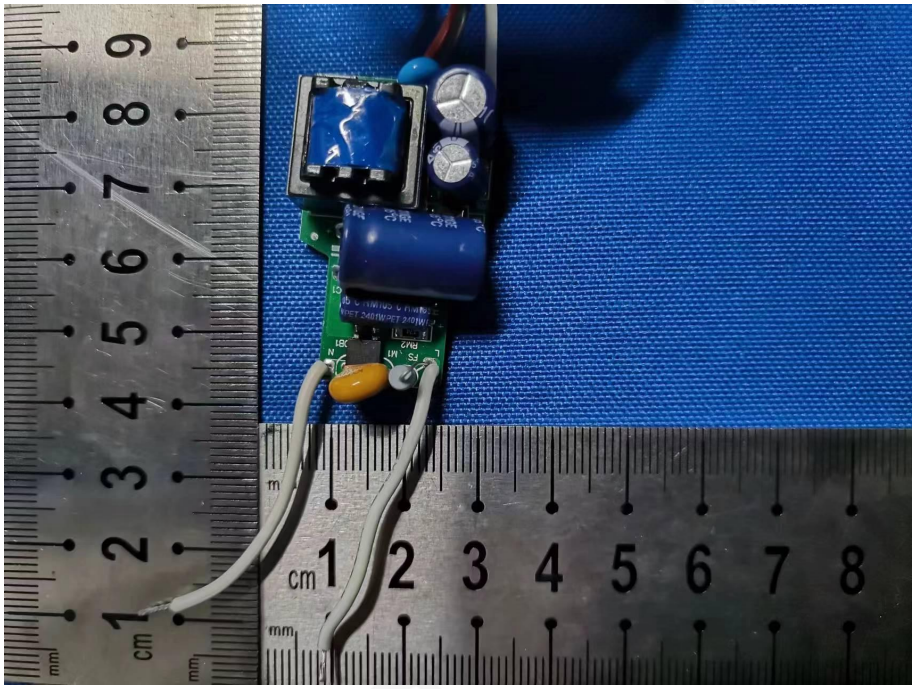


Photo 6

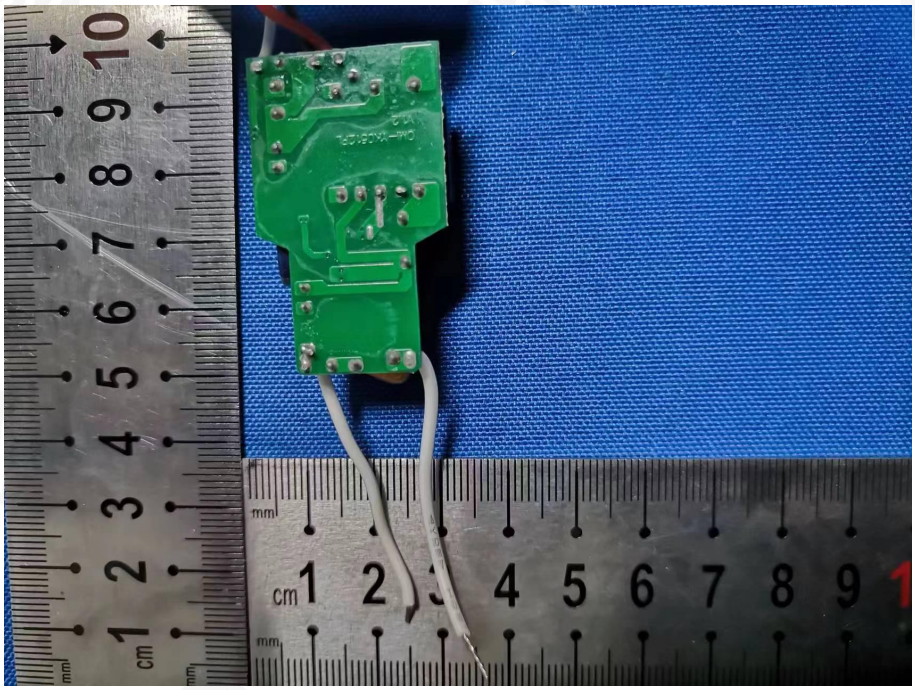


Photo 7

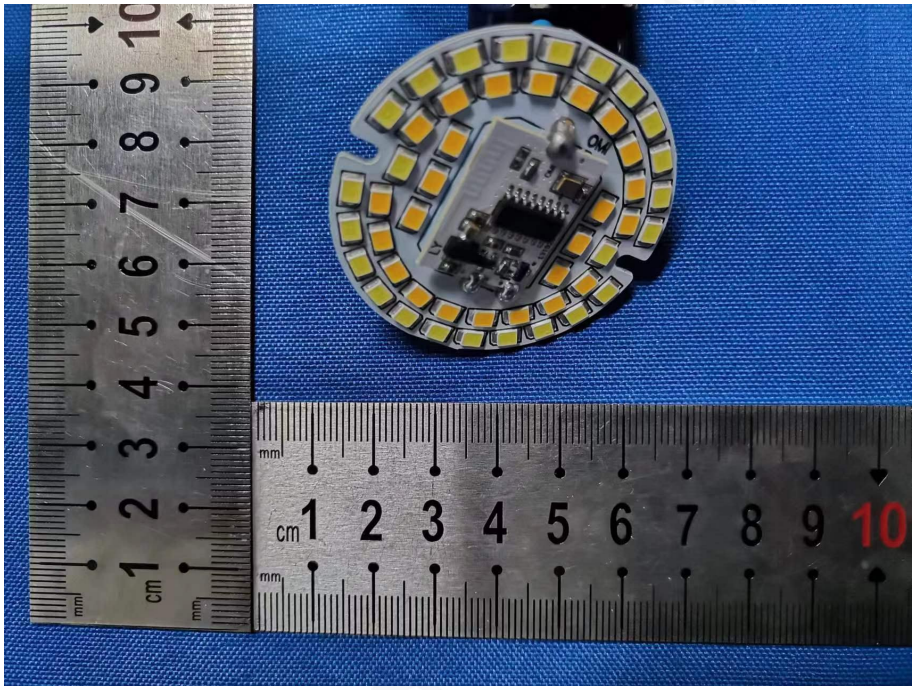


Photo 8

----------End of report----------