TEST REPORT

UL 1598

STANDARD FOR SAFETY-Luminaires

Job Number..... :	AOC251128016S
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Date of issue..... :	June 28, 2025
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Applicant's name..... :	Cowin Technology (Shenzhen) Co., Ltd
Address..... :	4th Floor, No.136 Shuotai Road, Lihu Community, Xinhu Street, Guangming District, Shenzhen
Manufacturer's name..... :	Cowin Technology (Shenzhen) Co., Ltd
Address..... :	4th Floor, No.136 Shuotai Road, Lihu Community, Xinhu Street, Guangming District, Shenzhen
Test specification:	
Standard..... :	UL 1598: 2018 Ed.4
Test procedure..... :	UL test report
Non-standard test method.....	N/A
Test Report Form No..... :	UL1598_2019
Test Report Form(s) Originator..... :	AOCE
Master TRF..... :	Dated 2019-10
Test item description..... :	LED OCEAN WAVE PROJECTOR WALL WASHER LAMP
Trade Mark..... :	COWIN
Model/Type reference..... :	60W-RGB, 40W-RGBW, 60W-RGBW
Ratings..... :	AC 100-240V, 50/60Hz, 60W

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.....:	
Date of receipt of test item.....:	June 21, 2025
Date (s) of performance of tests.....:	June 21, 2025 to June 28, 2025

General product information:

The product covered in this report is a LED OCEAN WAVE PROJECTOR WALL WASHER LAMP .

Relevant Technical consideration：

-Mass of equipment: N/A

-Maximum ambient temperature: 40° C.

-All models are identical other than the model name and appearance.

Copy of marking plate:

COWIN

LED OCEAN WAVE PROJECTOR WALL WASHER LAMP

Model: 60W-RGB

Input: AC 100-240V, 50/60Hz, 60W

Made in China

Label

Note:

1. The making will be silk-screen printed or stamped on the product.
2. The model 60W-RGB can be replaced by other models in this report.

UL 1598:2018 Ed.4

Test Required		Clause/ Section	Performance Test	Test Verdict	
Yes	N/A		Test Item Description	Pass	Fail
☒	☐	15	NORMAL TEMPERATURE TEST	☒	☐
☐	☒	16.2	ABNORMAL TEMPERATURE TEST (Non-IC Recessed)	☐	☐
☐	☒	16.3	ABNORMAL TEMPERATURE TEST (Non-IC Marked Spacing Recessed)	☐	☐
☐	☒	16.4	ABNORMAL TEMPERATURE TEST (IC Recessed)	☐	☐
☐	☒	16.5	ABNORMAL OVERLAMPING OPERATION TEST FOR INCANDESCENT LUMINAIRES WITH POLYMERIC HOUSINGS OR ENCLOSURE TEST	☐	☐
☒	☐	17.1	BARRIER STRENGTH TEST	☒	☐
☒	☐	17.2.2	COMPRESSION TEST	☒	☐
☒	☐	17.2.3	IMPACT TEST	☒	☐
☐	☒	17.3	FIVE-INCH FLAME TEST	☐	☐
☐	☒	17.4	MOLD STRESS RELIEF TEST	☐	☐
☐	☒	17.5.2	RAIN TEST	☐	☐
☐	☒	17.5.3	SPRINKLER TEST	☐	☐
☐	☒	17.5.10	GASKET ACCELERATED AGING TEST(B)	☐	☐
☐	☒	17.5.11	GASKET ADHESION	☐	☐
☐	☒	17.5.12	PAINT ADHESION	☐	☐
☐	☒	17.10	POLYMERIC SUPPORT TEST	☐	☐
☒	☐	17.13	CONDUIT KNOCKOUT AND TWISTOUT TEST	☒	☐
☒	☐	17.14	SELF-THREADING SCREW TORQUE TEST	☒	☐
☒	☐	17.15	LOADING TEST	☒	☐
☐	☒	17.19	MOVABLE JOINT ROTATION TEST	☐	☐
☐	☒	17.20	MOVABLE JOINT TORSION AND PULL TEST	☐	☐
☒	☐	17.21	STRAIN RELIEF TEST	☒	☐
☐	☒	17.22	TEMPERED GLASS IMPACT TEST	☐	☐
☐	☒	17.23	GLASS SUPPORT ADHESIVE TEST	☐	☐
☐	☒	17.24	GLASS SUPPORTED BY FRICTION OR ADHESIVE TEST	☐	☐
☐	☒	17.31	JUNCTION BOX RIGIDITY TEST	☐	☐
☒	☐	17.32	SPLICE INSPECTION TEST	☒	☐
☒	☐	17.33	LAMPHOLDER MOUNTING TORQUE TEST	☒	☐
☒	☐	17.34	LAMPHOLDER PULL TEST	☒	☐
☒	☐	17.38	LAMPHOLDER LEAD PULL TEST	☒	☐
☒	☐	17.39	GROUND-SCREW ASSEMBLY STRENGTH TEST	☒	☐
☒	☐	17.41	IMPACT TEST	☒	☐
☒	☐	17.42	METAL STRENGTH TESTS	☒	☐
☒	☐	18.1	DIELECTRIC VOLTAGE-WITHSTAND TEST	☒	☐
☒	☐	18.2	BONDING IMPEDANCE TEST	☒	☐

Remarks: N/A: not applicable.

NORMAL TEMPERATURE TEST

A luminaire that appears to be suitable for either ceiling or wall mounting shall be tested as one of the following:
a) a ceiling-mounted luminaire; or
b) a wall-mounted luminaire and shall be marked for wall mounting only, in accordance with Table 20.1.1, Item 2.10.
15.2.2 A luminaire shall be mounted on the test apparatus specified in Clause 19.10, directly under the outlet box, in the intended manner.

Remark: The Infrared Thermometer should be used to determine the hottest point of mounting surface.

Result:

Channel	Location	Actual Temp to amb. 25 °C (°C)	Limit (°C)
102	Input wire	56.3	105
103	Outlet box supply conductors	62.3	200
104	Nickel alloy current-carrying parts of a lampholder	85.4	315
105	Copper current-carrying parts of a lampholder	92.1	200
106	Lampholder	102.3	200
108	Outlet box supply conductors for dwellings – ceiling mount	56.6	90
109	AC motor winding	56.3	110

Remark:

Overall Comments:

This result (☒ **did** / ☐ **did not**) comply with the requirement.

ABNORMAL TEMPERATURE TEST N/A

1) A test box shall be constructed as specified in Clause 19.13.3.
2) A luminaire shall be installed in the test box in the normal temperature test configuration of Clause 15.5 that results in the lowest operating temperatures on luminaire surfaces that contact the test box or that can contact thermal insulation.

3) For ceiling-mounted luminaires, the thermal insulation specified in Clause 19.16 shall be placed around the luminaire in the test box as follows:
a) the initial depth of the thermal insulation shall be 100 mm (4 in) above the bottom of the test box or 50 mm (2 in) above the lowest glass portion of the test lamp, whichever is higher;
b) the initial depth of the insulation shall not exceed the height of the lamp compartment; and
c) if more than one test iteration is required to achieve the results specified in Clause 16.2.7, an additional 50 mm (2 in) of thermal insulation shall be added for each successive iteration. The last increase in thermal insulation may be less than a 50 mm (2 in) increment, to ensure that the maximum 216 mm (8.5 in) height requirement is not exceeded. For each additional thermal insulation level, the test shall be restarted with all temperatures at room ambient.

Remark: The Infrared Thermometer should be used to determine the hottest point of mounting surface.

Result:

Channel	Location	Actual Temp to amb. 25 °C (°C)	Limit (°C)
102			
103			
104			
105			
106			
107			
108			
109			
110			
111			
112			
113			
114			

Result:

~~The thermal protector:~~

☐ ~~operates within 3 h, and there (☐ **was no/** ☐ **was**) part of the luminaire in contact with thermal insulation or the test box exceeds 160 °C; or~~

☐ ~~does not operate within 3 h and the temperature limits specified in Table 14.1.2 (☐ **was not/** ☐ **was**) exceeded during the test. Any part of the luminaire in contact with thermal insulation or the test box (☒ **did not/** ☐ **did**) exceed 90 °C. The test shall be terminated after 7.5 h.~~

Overall Comments:

This result (☐ **did /** ☐ **did not**) comply with the requirement.

ABNORMAL OVERLAMPING OPERATION TEST FOR INCANDESCENT LUMINAIRES WITH POLYMERIC HOUSINGS OR ENCLOSURE TEST N/A

Method:
A luminaire shall be operated as specified in the normal temperature test, with the largest possible wattage lamp the luminaire will accommodates, for 7.5 hours.

Results:

✧ There (☐ **was no /** ☐ **was**) ignition of the polymeric material or exposure of live parts.
Note: Shrinkage, warpage, expansion, or cracking shall be acceptable.

Overall Comments:

This result (☐ **did /** ☐ **did not**) comply with the requirement.

BARRIER STRENGTH TEST

Method:

A sample luminaire with the barrier mounted as intended shall be tested.
A force of 44.5 N (10 lb) over an area of 6.45 cm^2 (1 in^2) shall be applied to the barrier for 1 minute.

Results:

- ✧ There (☒ **was no/** ☐ **was**) permanent distortion of a metal barrier;
- ✧ There (☒ **was no/** ☐ **was**) temporary or permanent reduction of electrical spacings; or
- ✧ There (☒ **was no/** ☐ **was**) breaking or cracking of a non-metallic barrier.

Overall Comments:

This result (☒ **did /** ☐ **did not**) comply with the requirement.

COMPRESSION TEST

Method:

The luminaire shall be tested as follows:
(a) the luminaire shall be placed on a flat horizontal surface.

(b) a 111 N (25 lb) force shall be applied, using a rod with a 25.4 mm (1 in) diameter face, to the center of the surface being tested for 1 min.

Results:

- ☒ **was no/** ☐ **was**) temporary or permanent reduction of electrical spacings; or
- ☒ **was no/** ☐ **was**) live part was accessible.

Overall Comments:

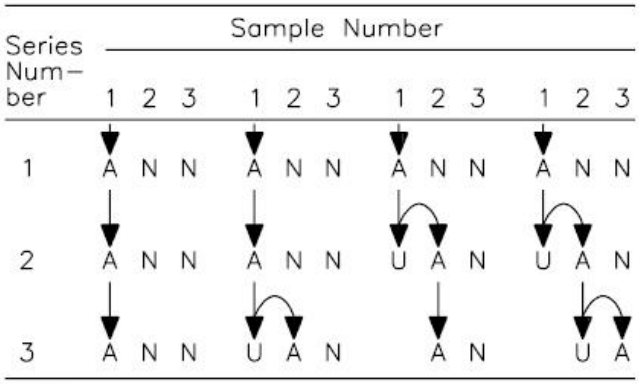
This result (☒ **did /** ☐ **did not**) comply with the requirement.

IMPACT TEST

Method:

- The sample luminaires shall be held in place and subjected to a single 7 J (5 ft·lb) impact, using the impact test apparatus described in Clause 19.21, falling through a vertical height of 1.29 m (4.24 ft), on surfaces being tested.
- The number of samples and the sequence of the procedure shall be in accordance with Figure 17.2.3.1.

Figure 16.2.3.1
Procedure for impact test
(See Clause 16.2.3.2.)



NOTES

(1) Arrows indicate sequence of test procedure.
(2) A indicates acceptable results from drop.
(3) U indicates unacceptable results from drop.
(4) N indicates that no test is necessary.

Results:

- ☒ **was not /** ☐ **was**) any visible damage to the enclosure of the unit that would result in the exposure of live parts as determined by contact with the accessibility probe.
- ☒ **was not /** ☐ **was**) any damaged to the enclosure of the unit that would result in an increase in the risk of electric shock as determined by compliance with the Dielectric Voltage-Withstand Test.
- ☒ **was not /** ☐ **was**) any cracking or denting of the enclosure of the unit that would affect the function of any safety controls or constructional features.

Overall Comments:

This result (☒ **did /** ☐ **did not**) comply with the requirement.

FIVE-INCH FLAME N/A

Method:

1. Three samples of complete luminaires or enclosure specimens shall be subjected to this test, using the test apparatus of Clause 19.24.

2. The conditioning described in Clause 17.3.3 shall be conducted only if:

(a) the enclosure material exhibits a reduction in flame-resistance properties as a result of long term thermal aging; or

(b) the enclosure material thickness is less than the minimum thickness subjected to the long term thermal aging.

3. After conditioning for 40 h at 23 ± 2 °C and 50 ± 5 percent relative humidity, the test samples shall be placed in a full-draft air-circulating oven for 7 d at a temperature at least 10 °C above the temperatures measured during the normal temperature test and, in no case, less than 70 °C.

4. The sample shall be positioned to simulate intended usage, with a layer of surgical cotton located 300 mm (12 in) below the point of test flame application.

5. The burner shall be placed in a location remote from the sample, in a vertical position, and ignited. The burner shall be adjusted to provide a 125 mm (5 in) overall height flame with a 38 mm (1.5 in) high inner blue cone.

6. The flame shall be applied at an angle of approximately 20 degrees from the vertical to 3 different locations on each of the 3 samples, in the following areas, as appropriate:

(a) any interior portion of the enclosure judged as likely to be ignited (by proximity to live arcing parts, coils, and conductors);

(b) the outside enclosure of encapsulated portions; and

(c) the outside enclosure, if the flame cannot be applied to the interior.

7. The flame shall be applied for 5 s and removed for 5 s. This cycle shall be repeated 5 times at each location.

8. If any one of the 3 samples does not comply, 3 new samples shall comply when the test is repeated in a manner identical to that used for the unsuccessful sample, in order for the test results to be acceptable.

Results:

- ✧ The material (☐ **did not/** ☐ **did**) continue to burn more than 1 minute after the fifth flame application at any of the locations.
- ✧ There (☐ **was no/** ☐ **was**) flaming drops or glowing particles that ignite the surgical cotton below the sample.
- ✧ The material (☐ **was not/** ☐ **was**) destroyed to such an extent that the integrity of the enclosure is affected with regard to containment of fire.

Overall Comments:

This result (☐ **did /** ☐ **did not**) comply with the requirement.

MOLD STRESS RELIEF TEST N/A

Method:

A sample of the complete thermoplastic enclosure shall be placed in a circulating air oven and maintained at a temperature 10 °C higher than the maximum temperature measured on the surface of the enclosure during the normal temperature test but in no case less than 70 °C, for a period of 7 h.

Results:

- ✧ The test temperature is_____°C.
- ✧ After the sample has cooled to room temperature, the sample shall (☐ **did /** ☐ **did not**) comply with the applicable requirements of this Standard.

Overall Comments:

This result (☐ **did /** ☐ **did not**) comply with the requirement.

RAIN TEST N/A

Method:

A luminaire that is subjected to the rain test shall be conditioned by performing the normal temperature test or by being operated for at least 30 min. After the conditioning, rings, frames, lamps, and other replaceable parts serving to compress gaskets and bushings shall be removed and then reinstalled.
The luminaire shall be installed in accordance with the manufacturer's instructions. The mounting shall simulate the intended mounting method, and only the surfaces exposed to the elements shall be subjected to the rain test. luminaire shall be positioned in the focal area of the spray heads of the rain test apparatus so that the greatest quantity of water is likely to enter the enclosure of the luminaire.
The test shall be conducted in the sequence shown in Table below

Rain test operating sequence

(See Clause 16.5.2.6.)

Test duration, h	Test period, h	Lamp	Water
0 – 1.0	1.0	On	Off
1.0 – 1.5	0.5	Off	On
1.5 – 3.5	2.0	On	On
3.5 – 4.0	0.5	Off	On

Test apparatus:
The rain test apparatus shall to consist of 3 spray heads mounted in a water supply pipe rack as shown in Standad Cl.19.7.1 The spray heads shall be in accordance with Standard Cl.19.7.2
The water pressure shall be maintained at 34.5 kPa (5 psi) at each spray head.

Results:

- ✧ There (☐ **was no/** ☐ **was**) breakdown during dielectric-voltage withstand test
- ✧ The luminaire (☐ **had not/** ☐ **had**) permitted water to enter and accumulate in quantities sufficient to interfere with operation of the luminaire or to create a hazard; and
- ✧ The luminaire (☐ had not/ ☐ had) permitted water to contact electrical parts, except lamps or components suitable for the condition. Drops of water are permitted to be present on the insulation of non-braided thermoplastic insulated wire but insulated wire shall not in pool of water

Overall Comments:

This result (☐ **did /** ☐ **did not**) comply with the requirement.

SPRINKLER TEST N/A

Method:

- A luminaire that is subject to the sprinkler test shall be conditioned by performing the normal temperature test or by being operated for at least 30 min.
- After the conditioning, rings, frames, lamps, and other replaceable parts of the luminaire serving to compress gaskets and bushings shall be removed and then reinstalled.
- The luminaire shall be installed in accordance with the manufacturer's instructions. The mounting shall simulate the intended mounting method, and only the surfaces exposed to the elements shall be subjected to the sprinkler test.
- A ground-mounted surface luminaire shall be turned about its vertical axis to four positions, each 90 degrees from the others. It shall remain in each position for 30 min during the 2 h portion of the test, with the adjustable parts arranged for maximum vulnerability to the water spray.
- A ceiling-mounted or wall-mounted luminaire shall be installed with the vertical axis of the luminaire 910 mm (36 in) away from the vertical plane of the spray head and positioned with the dimensional center of the luminaire on a line projected from the centerline of the spray head.
- The test shall be conducted in the sequence shown in Table BELOW

Sprinkler test operating sequence

(See Clause 16.5.3.7.)

Test duration, h	Test period, h	Lamp	Water
0 – 1.0	1.0	On	Off
1.0 – 1.5	0.5	Off	On
1.5 – 3.5	2.0	On	On
3.5 – 4.0	0.5	Off	On

Test apparatus

The sprinkler test apparatus shall consist of a single spray head mounted as shown in Figure19.18.1 of Standard. The spray head shall be in accordance with Figure 19.18.2 of standard

The water pressure shall be maintained at 140 kPa (20 psi) at the spray head.

Results:

- ✧ There (☐ **was no/** ☐ **was**) breakdown during dielectric-voltage withstand test
- ✧ The luminaire (☐ **has not/** ☐ **has**) permitted water to enter and accumulate in quantities sufficient to interfere with operation of the luminaire or to create a hazard; and
- ✧ The luminaire (☐ **has not/** ☐ **has**) permitted water to contact electrical parts, except lamps or components suitable for the condition. Drops of water are permitted to be present on the insulation of non-braided thermoplastic insulated wire but insulated wire shall not in pool of water

Overall Comments:

This result (☐ **did /** ☐ **did not**) comply with the requirement.

GASKET ACCELERATED AGING N/A

Method B:

Test apparatus:
Test weight (Test specimen:):
The backing plate shall be galvanized or painted sheet steel, 50 mm (2 in) wide, 225 mm (9 in) long, and 1.6 to 3.5 mm (0.063 to 0.140 in) thick.
The weight shall be a round steel bar 100 mm (4 in) in diameter, approximately 300 (12 in) long, weighing 18 kg (40 lb), and producing a pressure of 69 kPa (10 lbs/in2) on the test specimen.

The test specimen shall be 25 mm (1 in) wide and 200 mm (8 in) long, and shall be attached to the backing plate by the manufacturer, using the proposed adhesive and production method.

- Three specimens of the gasket or bushing material shall be measured to determine the average thickness.
- The test weight shall be placed on the middle portion of each specimen for a period of **2 h**. At the end of that time, the weight shall be removed and the specimen shall be allowed to rest at room temperature for **30 min**. The average thickness of the compressed portion of the 3 specimens shall be more than **50** percent of the initial thickness.
- The specimens shall be conditioned for **168 h** in a circulating air oven at a temperature **20 °C above** the maximum gasket or bushing temperature as determined by the normal temperature test

Results:

✧ The initial thickness of the specimens is _____mm, the measured thickness of the specimens was _____mm, average thickness of the compressed portion of the specimens was _____mm, which (☐ **was /** ☐ **was not**) more than 50 percent of the initial thickness.

Overall Comments:

This result (☐ **did /** ☐ **did not**) comply with the requirement.

GASKET ADHESION N/A

Method:

Three gasket assemblies shall be used to determine the average initial force required to remove the gasket from its mounting surface. The force shall be applied to the edge of the gasket in a plane perpendicular to the surface on which the gasket is mounted.
Six additional gasket assemblies shall be conditioned for 168 h in a circulating air oven at a temperature 20 °C above the maximum gasket or bushing temperature as determined by the normal temperature test
The force required to remove the gaskets from the mounting surface of three samples shall be measured within 30 min after the conditioning. The force required to remove the gaskets from the mounting surface of the three remaining samples shall be measured 24 h after the conditioning.

Results:

Initial removal force: Sample 1_____, Sample 2_____, Sample 3_____
Removal force after 168 conditioning,
30 min cooling: Sample 1_____, Sample 2_____, Sample 3_____
24 hour cooling: Sample 1_____, Sample 2_____, Sample 3_____

- ✧ The average force necessary to remove the gaskets from the mounting surface (☐ **was not/** ☐ **was**) less than **60 percent** of the initial average value measured before conditioning.

Overall Comments:

This result (☐ **did /** ☐ **did not**) comply with the requirement.

PAINT ADHESION N/A

Method:

An area of approximately 625 mm^2 (1 in^2) shall be cross-cut with a sharp knife. The cuts in the same direction shall be parallel and spaced 1 to 2 mm (0.40 to 0.80 in) apart. Cellulose adhesive tape shall be firmly applied to the cross-cut surface, and remove the tape.
When a sharp knife is scraped across the painted surface, the paint may have a tendency to curl, but shall not flake, crumble, or give evidence of lack of adhesion.

Results:

✧ There (☐ **was not /** ☐ **was**) more than 15 percent of the paint was removed from the test sample.

Remark: _____

Overall Comments:

This result (☐ **did /** ☐ **did not**) comply with the requirement.

POLYMERIC SUPPORT TEST N/A

Method:

A polymeric part shall support for 1 minute, without distortion, four times the weight of a part (4 x_____=_____Kg) it is relied upon to suspend in its intended application.

The test shall be performed in an oven maintained at a temperature 10 °C higher than the maximum normal operating temperature of the polymeric part measured during the normal temperature test of Clause 14. The test temperature is_____ºC;

A polymeric part shall be installed as intended, with the weight evenly distributed.

Results:

✧ There (☐ **was no /** ☐ **was**) distortion during and after the test.

Overall Comments:

This result (☐ **did /** ☐ **did not**) comply with the requirement.

CONDUIT KNOCKOUT AND TWISTOUT TEST

Method:

The following test shall apply only to conduit entries and shall be performed on a sample securely held in place using the test apparatus described in Clause 19.23.

A force of 44 N (10 lb) shall be applied to a knockout for 1 min by means of a 6.4 mm (0.250 in) diameter mandrel with a flat end. The force shall be applied to the exterior surface of the knockout, in a direction perpendicular to the plane of the knockout, and at the point most likely to result in movement.

Results:

- ✧ The knockout (☒ **did /** ☐ **did not**) remain in place;
- ✧ The clearance between the knockout and the opening was 3.2 mm, which (☒ **was not/** ☐ **was**) more than 1.6 mm (0.063 in) when measured after the force has been removed.

Overall Comments:

This result (☒ **did /** ☐ **did not**) comply with the requirement.

SELF-THREADING SCREW TORQUE TEST

Method:

Self-threading or sheet metal screws are tightened with a torque of 3.39 Nm (30 lb.in) and if the parts or the assembly supported by the screw withstands for 1 min a force equal to four times the mass of the part or assembly, applied in the direction coincident with the axis of the screw.

Results:

✧ The threads (☒ **was not /** ☐ **was**) stripped.

Overall Comments:

This result (☒ **did /** ☐ **did not**) comply with the requirement.

LOADING TEST

Method:

A supporting device shall support for 1 hour a load equal to 4 times of the mass to be supported under intended operating conditions. Load shall be applied in the direction of actual loading conditions.
Where more than one support is provided, the load shall be distributed as follows:
(a) where the parts supported are no more than 11.3 kg (25 lb), the full load shall be applied to each support; or
(b) where the parts supported are more than 11.3 kg (25 lb), the distribution of the load shall be similar to that encountered in the field.

Model no.	Whole Weight (Kg)	Test (Kg)	Remark
60W-RGB	2.17	8.0	PASS
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Results:

✧ There (☒ **was no /** ☐ **was**) deflection or deformation either during or after loading that reduces electrical spacing or compromises safety.

Overall Comments:

This result (☒ **did /** ☐ **did not**) comply with the requirement.

MOVABLE JOINT ROTATION TEST N/A

Method:

A movable joint shall be SUBJECT TO 6000 cycles of motion, linear or rotational. One cycle shall consist of moving the part to the maximum extent possible in one direction and back again, then to the maximum extent possible in the opposite direction.

Results:

✧ There (☐ **was no /** ☐ **was**) damage to the jacket or the insulation of the conductors

Overall Comments:

This result (☐ **did /** ☐ **did not**) comply with the requirement.

MOVABLE JOINT TORSION AND PULL TEST N/A

Method:

A movable joint shall subject to the following for 1 min:
(a) a torsion of 2.26 ± 0.056 N·m (20 ± 0.5 lb·in); and
(b) a straight pull applied by a mass of 16 kg (35 lb) or four times the maximum weight recommended by the manufacturer, whichever is greater.

Results:

- ✧ The product (☐ **could/** ☐ **couldn't**) withstand the torsion test.
- ✧ The product (☐ **could/** ☐ **couldn't**) withstand the pull test.

Overall Comments:

This result (☐ **did /** ☐ **did not**) comply with the requirement.

STRAIN RELIEF

Method:

-Strain relief for flexible cords-
A pull force of 156 N (35 lb) shall be applied for 1 minute to the flexible cord in a direction perpendicular to the plane of the entrance into the luminaire.

-Strain relief for conductors-
A pull force of 89 N (20 lbf) shall be applied for 1 min to the conductor in a direction perpendicular to the plane of the entrance to the conductor connection.

Results:

☒ Strain relief for flexible cords:
- ✧ The movement of the flexible cord was 0.5 mm, which (☒ **was not /** ☐ **was**) more than 1.6 mm (0.063 in); and
- ✧ There (☒ **was no /** ☐ **was**) breaking of the conductor or loosening of the wiring connections inside the enclosure of the luminaire.

☐ Strain relief for conductors:
- ✧ There (☐ **was no /** ☐ **was**) breaking of the conductor or loosening of the conductor connections.

Overall Comments:

This result (☒ **did /** ☐ **did not**) comply with the requirement.

TEMPERED GLASS IMPACT TEST N/A

Method:

- A test specimen of tempered glass shall be broken by impact to determine the acceptability of the temper of the glass.
- The test shall be conducted at 25 ± 5 °C.
- The specimen shall be weighed, and the weight of 65 cm^2 (10 in^2) shall be calculated.
- The lower surface of the tempered glass specimen shall be covered with adhesive tape to retain the particles when the specimen breaks.
- The glass shall be placed on a flat surface and shattered with a center punch at a point 30mm(1.18 in) from the midpoint on the edge of the glass toward the center. The edge shall be defined as the longest dimension on an irregular shape. When shattered, the glass shall completely dice into particles.
- The 10 largest crack-free particles shall be weighed together within 5 min, to avoid further fracture.

Results:

✧ The total weight of the largest crack-free particles is _____ Kg, and (☐ **was /** ☐ **was not**) less than the calculated weight of 65 cm^2 (10 in^2) of the original specimen. (_____ Kg)

Overall Comments:

This result (☐ **did /** ☐ **did not**) comply with the requirement.

GLASS SUPPORT ADHESIVE TEST N/A

Method:

- One sample assembly of the glassware and the adhesive material used as the sole support shall be conditioned at 23 ± 2 °C and a relative humidity of 50 ± 5 percent for 48 h.
- They shall then be placed in an air-circulating oven at the temperature and for the time specified by Table below. The adhesive rating temperature shall be based on results from the temperature test;

Glass adhesive conditioning oven temperature and time

(See Clause 16.23.2.)

Adhesive rating, °C	Oven temperature, °C			
	300 h (12.5 d)	720 h (30 d)	1000 h (42 d)	1440 h (60 d)
60	125	115	110	100
75	145	135	125	110
90	160	150	140	130
105	180	170	160	145
130	200	190	180	170
155	220	215	205	195
180	245	235	230	220
200	280	265	255	245
220	295	285	275	265
240	N/A	300	290	280

- After conditioning, the sample shall be removed from the oven and allowed to cool to room temperature. The sample shall be supported in the intended manner, shall be oriented so the adhesive supports the glass and shall comply with the glass support test of Clause 17.24.

Results:

- ✧ The sample is placed in an air-circulating oven at the temperature____°C.
- ✧ After the conditioning, the glass (☐ **can /** ☐ **can not)** stay in place under weight ___for 1 minute.

Overall Comments:

This result (☐ **did /** ☐ **did not**) comply with the requirement.

GLASS SUPPORTED BY FRICTION OR ADHESIVE TEST N/A

Method:

- A sample of each luminaire style employing a glass diffuser that is supported by friction or adhesive shall be tested as follows:
  (a) The diffuser shall be weighed. _____Kg
  (b) an amount of granular material, such as sand, equal to four times the weight of the diffuser shall be poured into the diffuser and distributed it evenly. 4 x ___Kg = ___Kg
  (c) The diffuser shall be mounted as intended.

- The diffuser shall stay in place for 1 min.

Results:

The diffuser (☐ **did /** ☐ **did not**) stay in place

Overall Comments:

This result (☐ **did /** ☐ **did not**) comply with the requirement.

SPLICE INSPECTION

Method:

- A short length of No. 14 AWG or larger wire shall be connected to the luminaire leads in the junction box or wiring compartment. The luminaire shall be mounted in the manner intended.
- A visual inspection of the splices in the wiring compartment shall be conducted from the room side of the luminaire.
- All parts that are required to be removed to gain access to the splices shall be easily removed and replaced from the room side of the luminaire.

Results:

✧ The connections to the branch circuit supply, including the ground, (☒ **was /** ☐ **was not**) visible through the luminaire access opening.

Overall Comments:

This result (☒ **did /** ☐ **did not**) comply with the requirement.

JUNCTION BOX RIGIDITY TEST

Method:

- The luminaire shall be secured on a 12.7 mm (0.5 in) thick wood panel so that it is rigidly affixed to the panel, and the panel shall extend beyond the junction box;
- All junction box covers shall be removed;
- The weight specified in Table 17.31.1 shall be attached, by a wire or cord that does not contact any surface of the junction box, to a conduit fitting installed to the box so the force is applied from inside the junction box at the point most likely to result in deformation; and

Table 16.31.1
Deformation forces

(See Clause 16.31.1.)

Number of conductors in or out	Force in pounds, lb	
	12 AWG	14 AWG
1 or 2	15	14
More than 2	30	16

- After 2 min, the weights shall be removed and any permanent deformation from the original shall be measured.

Results:

✧ Permanent deformation of the (☐ **junction box/** ☐ **its hardware/** ☒ **its attachment to the luminaire**) was __1.6___mm, which (☒ **did not/** ☐ **did**) exceed 3.2 mm.

Overall Comments:

This result (☒ **did /** ☐ **did not**) comply with the requirement.

LAMPHOLDER MOUNTING TORQUE

Method:

A torque of 2.26 N·m (20 lb·in) shall be gradually applied to a medium-base screwshell-type lampholder and held for 1 min using the apparatus of Clause 19.27.

Results:

- ✧ The lampholder (☒ **did** / ☐ **did not**) remain in place.
- ✧ There (☒ **was no** / ☐ **was**) permanent deformation of the polymeric housing.
- ✧ Electrical spacings (☒ **did** / ☐ **did not**) comply with Clause 6.11.

Overall Comments:

This result (☒ **did** / ☐ **did not**) comply with the requirement.

LAMPHOLDER PULL

Method:

A force of 89 N (20 lb) shall be gradually applied to the screwshell of a medium-base lampholder in a straight down direction and held for 1 min using the test apparatus of Clause 19.27.

Results:

- ☒ **was no /** ☐ **was**) permanent deformation of the polymeric housing;
- ☒ **did /** ☐ **did not**) comply with Clause 6.11.

Overall Comments:

This result (☒ **did /** ☐ **did not**) comply with the requirement.

LAMPHOLDER LEAD PULL TEST

Method:

A pull force of 89 N (20 lbf) shall be applied for 1 min to each conductor terminating at the lampholder in any direction permitted by the luminaire construction.

Results:

✧ There (☒ **was no /** ☐ **was**) uninsulated live parts can be accessible as a result of the application of the test force.

Overall Comments:

This result (☒ **did /** ☐ **did not**) comply with the requirement.

GROUND-SCREW ASSEMBLY STRENGTH TEST

Method:

A 12 AWG (3.3 mm) solid-copper, insulated conductor shall be stripped to a length of 2.5 cm (1 inch) minimum. The wire shall be wrapped around the screw under the screw head so that it makes a minimum 180° turn. The conductor shall be seated to follow any wire guides or dimples provided to align the conductor with the mating surface. The ground screw shall be tightened with a calibrated torque screwdriver to 1.6 N·m (14 lb-in).

Results:

When tested as described in this section:

- ☒ **was no /** ☐ **was**) damage to the head of the ground screw which would prevent the 1.6 N·m (14 lb-in) of tightening torque to be achieved;
- ☒ **was no /** ☐ **was**) stripping of the ground screw assembly.

Overall Comments:

This result (☒ **did /** ☐ **did not**) comply with the requirement.

IMPACT TEST

Method:

- The sample luminaires shall be held in place and subjected to a single 7 J (5 ft·lb) impact, using the impact test apparatus described in Clause 19.21, falling through a vertical height of 1.29 m (4.24 ft), on surfaces being tested. The test samples shall be conditioned by placing them in a conditioning environment in accordance with Table 17.41.1 for at least 3 h prior to the test.

Table 16.41.1
Sample conditioning

Location marking	Preconditioning temperature
Dry	23 ± 2.0 C
Damp	0.0 ± 2.0 C
Wet	-35 ± 2.0 C

- The number of samples and the sequence of the procedure shall be in accordance with Figure 17.2.3.1.

Figure 16.2.3.1
Procedure for impact test
(See Clause 16.2.3.2.)

Series Number	Sample Number											
	1	2	3	1	2	3	1	2	3	1	2	3
1	A	N	N	A	N	N	A	N	N	A	N	N
2	A	N	N	A	N	N	U	A	N	U	A	N
3	A	N	N	U	A	N		A	N		U	A

NOTES
(1) Arrows indicate sequence of test procedure.
(2) A indicates acceptable results from drop.
(3) U indicates unacceptable results from drop.
(4) N indicates that no test is necessary.

Results:

- There (☒ **was not /** ☐ **was**) any visible damage to the enclosure of the unit that would result in the exposure of live parts as determined by contact with the accessibility probe.
- There (☒ **was not /** ☐ **was**) any damaged to the enclosure of the unit that would result in an increase in the risk of electric shock as determined by compliance with the Dielectric Voltage-Withstand Test.
- There (☒ **was not /** ☐ **was**) any cracking or denting of the enclosure of the unit that would affect the function of any safety controls or constructional features.

Overall Comments:

This result (☒ **did /** ☐ **did not**) comply with the requirement.

METAL STRENGTH TESTS

Method:

The dead metal part shall be subjected to a 111 N (25 lbf) force for 1 min. The force is to be applied by means of a steel hemisphere 12.7 mm (1/2 in) in diameter. The force is to be applied at the location(s) most likely to produce unacceptable results..

The enclosure is to be subjected to a single impact of 6.8 N·m (5 ft-lbf) at the location(s) most likely to produce unacceptable test results. The impacts are to be applied by means of a smooth, solid steel sphere 50.8 mm (2 in) in diameter and having a 535 g (1.18 lb) mass. The sphere is to fall freely from rest through a vertical distance of 1.29 m (51 in), or swung as a pendulum through the same vertical distance.

Results:

- ✧ There (☒ **was not /** ☐ **was**) permanent displacement to the extent that spacings are reduced below the values specified in UL 8750, CSA C22.2 No. 250.13, or Annex F (CAN) of this standard, as applicable.
- ✧ There (☒ **was not /** ☐ **was**) displacement during the test that results in contact with live parts other than those connected in a Class 2 circuit
- ✧ There (☒ **was not /** ☐ **was**) development of openings that expose parts that involve a risk of electric shock. Any openings resulting from the test are to be judged under the requirements for accessibility of live parts specified in Clause 6.13.

Overall Comments:

This result (☒ **did /** ☐ **did not**) comply with the requirement.

DIELECTRIC VOLTAGE-WITHSTAND TEST

Test voltage:

1000/ 1240V 60Hz (for UL & CSA Std).

Method:

- A luminaire shall withstand for a period of **1 minute**, without breakdown, a test potential applied between live parts and accessible non-current-carrying metal parts, including parts accessible only during relamping.
- The test potential shall be **1000 V for incandescent-type** luminaires and **1000 V plus twice the rated input voltage for all other types** of luminaire.
- The applied potential shall be gradually increased from zero at a uniform rate until the required test value is reached or breakdown occurs. During the test, any switches or other controls shall be in the ON position.
- The test shall be performed on a fully assembled luminaire. Non-current-carrying parts or decorative parts not likely to become energized shall not be required to be in place.
- Solid state components that are not relied upon to reduce the risk of electric shock and that can be damaged by the applied dielectric potential may be disconnected for the test. The circuitry may be rearranged for the purpose of the test to reduce the likelihood of solid state component damage while retaining the representative dielectric stress on the circuit.

Results:

✧ During the above test, (☒ **no breakdown /** ☐ **breakdown**) occurred.

Overall Comments:

This result (☒ **did /** ☐ **did not**) comply with the requirement.

BONDING IMPEDANCE TEST

Method:

- A luminaire shall be tested for impedance of the bonding of accessible non-current carrying metal parts with the grounding terminal means. When tested in accordance with following
- The test of impedance shall be performed by passing a **30 A** current from a part to be grounded to the grounding terminal means for a period of **2 min** and measuring the potential drop between them at the end of the period.

Results:

Model No.	Sample No.	Measured part	Voltage drop(V)/ Resistance (Ω)	Melting metal or have heating or burning likely to create a fire hazard.
60W-RGB	#10	Ground wire input terminal to farthest metal enclosure	1.5V/0.05A	No ☒ ; Yes ☐

Overall Comments:

✧ The measured Voltage drop(V) / Resistance(Ω) (☒ **was /** ☐ **was not**) lower than 4V/ 0.1Ω.

✧ This result (☒ **did /** ☐ **did not**) comply with the requirement.

TABLE: Critical components information						
Object / part No.	**Code**	**Manufacturer/ trademark**	**Type / model**	**Technical data**	**Standard**	**Mark(s) of conformity[1)]**
Terminal block	C	KÖRNER s.r.l.	OK 433 NY-LP	450 V, T110, 24A, 1.0-2.5mm^2	EN 60998-1 EN 60998-2-1	VDE 40022711
Internal wire	C	Zhongshan Guzhen Pinzheng Wire and Electric Appliance Factory	H05V-K	1.0 mm^2	EN 50525-2-31	VDE 40044733
Earthing wire	C	Shenzhen City Youchuangda Special Wire & Cable Co Ltd	1015	18 AWG, 600 V, 105 ℃	IEC 60598-2-2	Test with appliance UL E494503
Plastic material for fixed COB LED	C	KINGFA SCI & TECH CO LTD	RAF-9400(++)(f1)	ABS, V-0	IEC 60598-2-2	Test with appliance UL E171666
LED Driver	A	TCI TELECOMUNICAZIONI ITALIA – S.R.L.	PRO FLAT 38 DALI NFC LG BI	Input: 220-240 V, 50/60 Hz or 50-60 Hz, 0.2A or 176-275 V, 0 Hz, 0.25A, 0.95 PF Output: 1.5-38 W, 0.15-1.05 A, Uout = 59 Vdc, ta:45 °C, tc:80 °C SELV, Built-in controlgear	IEC 61347-1 IEC 61347-2-13	CB_NL-89994
COB LED module	C	SIMES S.P.A	COB 19W	0.15-1.05 A, 19 W, CCT: 3000K	IEC 62031	Test with appliance
- LED module PCB	C	SHENZHEN BOMIN ELECTRONIC CO LTD	BM-CC3 (ASP 1)	V-0, 150 °C	IEC 62031	Test with appliance UL E213371

- LED chips	C	CITIZEN ELECTRONICS CO.,LTD.	CLU02Q-1204E1-302H6Y3	VF: 31.4-36.2 V IF: 360mA CCT: 3000K	IEC 62031	Test with appliance

Supplementary information:

[1)] Provided evidence ensures the agreed level of compliance. See OD-CB2039.

The codes above have the following meaning:

A - The component is replaceable with another one, also certified, with equivalent characteristics

B - The component is replaceable if authorised by the test house

C - Integrated component tested together with the appliance

D - Alternative component

Pictures

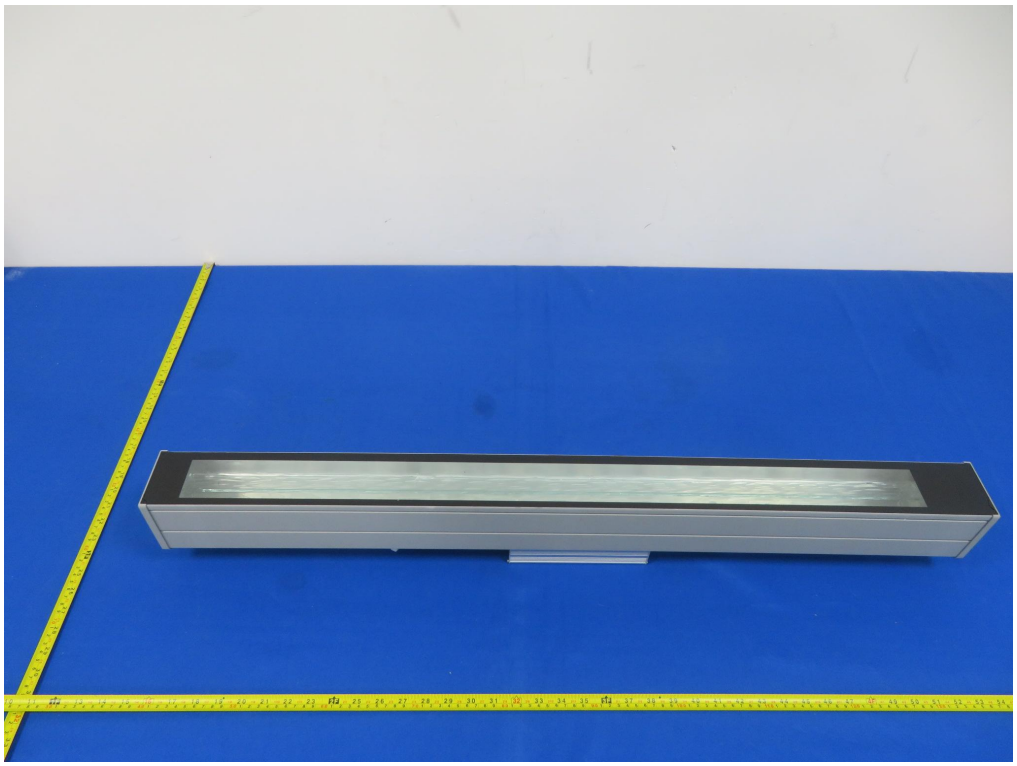

Figure 1

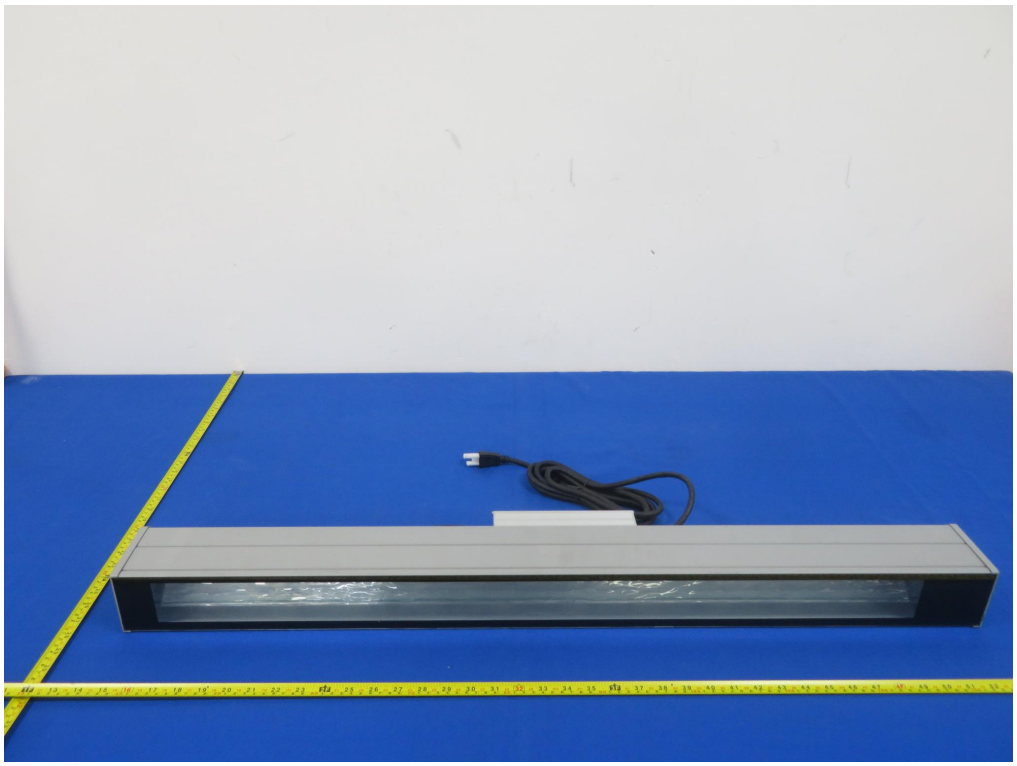

Figure 2

Pictures

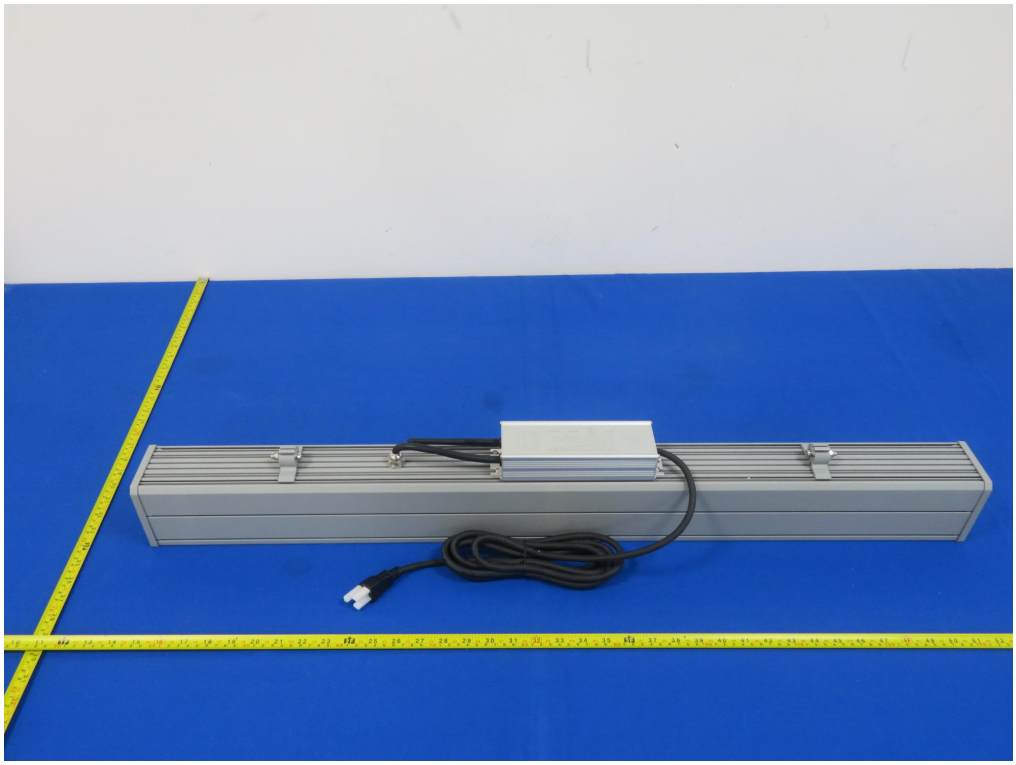

Figure 3

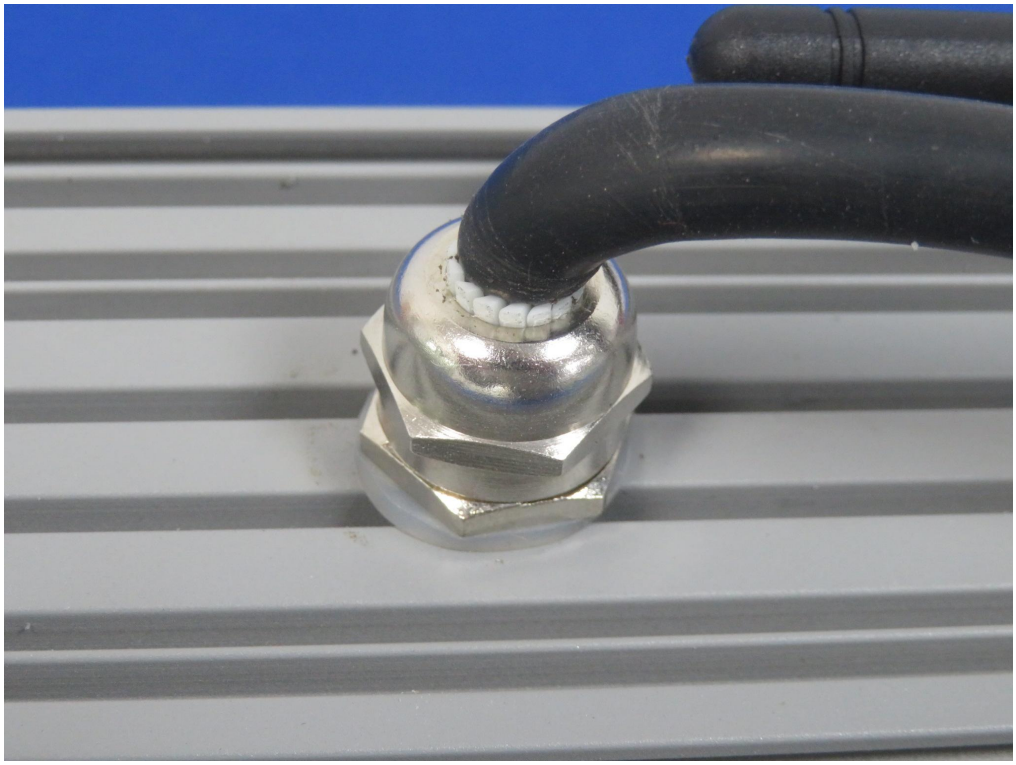

Figure 4

Pictures

Figure 5

Figure 6

Pictures

Figure 7

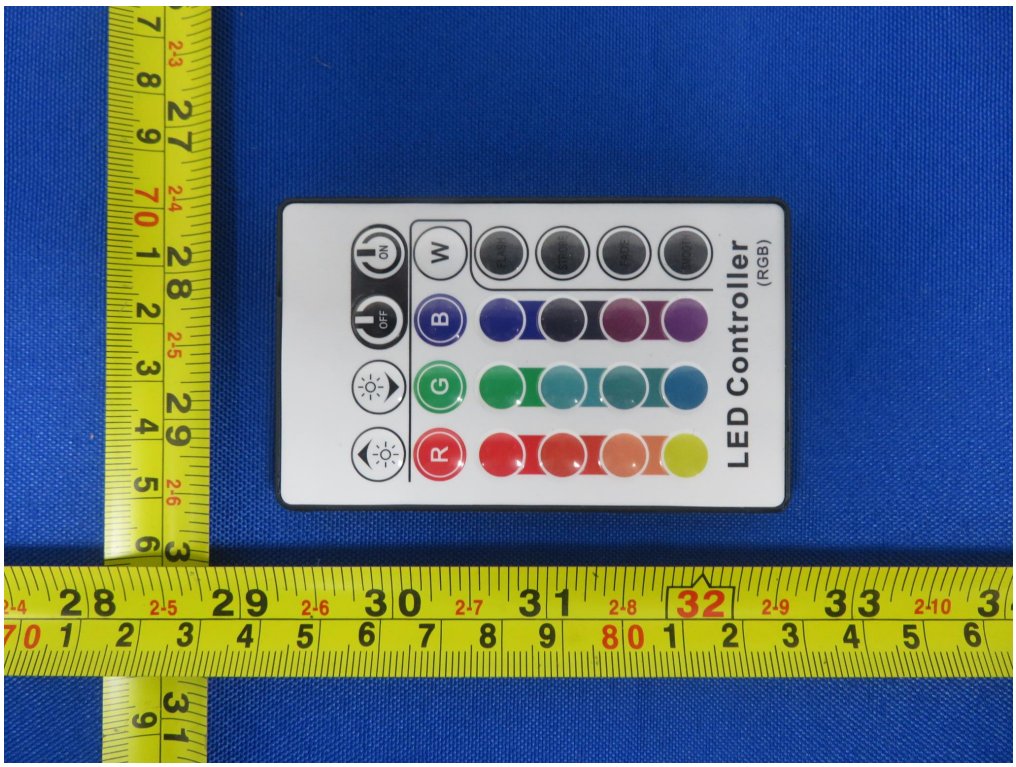

Figure 8

********** End of report **********