

# TEST REPORT

**Client company** : Shenzhen Unicorn Lighting Co., LTD.

**Client address** : 5F, Bld. 1, Zhongsheng Mansion, 99 Longguan West Road, Dalang, Longhua District, Shenzhen

**Manufacturer** : Shenzhen Unicorn Lighting Co., LTD.

**Address** : 5F, Bld. 1, Zhongsheng Mansion, 99 Longguan West Road, Dalang, Longhua District, Shenzhen

**Report on the submitted samples said to be:**

**Sample Name** : LED Panel Light

**Trade Mark** : N/A

**Style/ Item No.** : PH018TE22, PH034TE22, PH042TE22, PH018TE14, PH034TE14, PH042TE14, PH018TE62, PH034TE62, PH042TE62, PH018EE, PH030EE, PH040EE, PH050EE

**Sample Receiving Date** : August 18, 2025

**Testing Period** : August 18, 2025 ~ August 26, 2025

**Results** : Please refer to next page(s).

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## Summary of Test Results:

### TEST REQUEST

### CONCLUSION

A RoHS Directive (EU) 2017/2102 amending Annex II to Directive 2011/65/EU.

**POSITIVE**

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Signed for and on behalf of AOCE

Written By:

Sunny Su

Sunny Su  
File administrators

Approved by:

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Alice Zhou  
Manager

**Results:**

**A. EU RoHS Directive 2011/65/EU and its amendment directives on XRF**

Test method: With reference to IEC 62321-3-1:2013, Screening by X-ray Fluorescence Spectroscopy (XRF)

| Seq.<br>No. | Tested Part(s)          | Results |    |    |    |    |
|-------------|-------------------------|---------|----|----|----|----|
|             |                         | Pb      | Cd | Hg | Cr | Br |
| 1           | White plastic enclosure | BL      | BL | BL | BL | BL |
| 2           | White metal enclosure   | BL      | BL | BL | BL | BL |
| 3           | Silver metal screw      | BL      | BL | BL | BL | BL |
| 4           | Lamp shade              | BL      | BL | BL | BL | BL |
| 5           | Lamp bead               | BL      | BL | BL | BL | BL |
| 6           | Chips of resistance     | BL      | BL | BL | BL | BL |
| 7           | Chips of capacitance    | BL      | BL | BL | BL | BL |
| 8           | PCB                     | BL      | BL | BL | BL | BL |
| 9           | Solder on PCB           | BL      | BL | BL | BL | BL |

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Note:

-- = Not Conducted  
\* = Screening by XRF and detected by chemical method. The test results of chemical method please refer to next pages.

- i Results were obtained by XRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBBs, PBDEs) are recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321-3-1:2013.

| Element | Unit  | Non-metal                                            | Metal                                                | Composite Material                                   |
|---------|-------|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| Cd      | mg/kg | $BL \leq 70 - 3\sigma < X < 130 + 3\sigma \leq OL$   | $BL \leq 70 - 3\sigma < X < 130 + 3\sigma \leq OL$   | $BL \leq 50 - 3\sigma < X < 150 + 3\sigma \leq OL$   |
| Pb      | mg/kg | $BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$ | $BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$ | $BL \leq 500 - 3\sigma < X < 1500 + 3\sigma \leq OL$ |
| Hg      | mg/kg | $BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$ | $BL \leq 700 - 3\sigma < X < 1300 + 3\sigma \leq OL$ | $BL \leq 500 - 3\sigma < X < 1500 + 3\sigma \leq OL$ |
| Cr      | mg/kg | $BL \leq 700 - 3\sigma < X$                          | $BL \leq 700 - 3\sigma < X$                          | $BL \leq 500 - 3\sigma < X$                          |
| Br      | mg/kg | $BL \leq 300 - 3\sigma < X$                          | --                                                   | $BL \leq 250 - 3\sigma < X$                          |

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Note:

BL = Below Limit  
OL = Over Limit  
X = Inconclusive

- ii The XRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.
- iii The maximum permissible limit is quoted from the document 2005/618/EC amending RoHS directive 2011/65/EU:

| RoHS Restricted Substances            | Maximum Concentration Value (mg/kg)<br>(by weight in homogenous materials) |
|---------------------------------------|----------------------------------------------------------------------------|
| Cadmium (Cd)                          | 100                                                                        |
| Lead (Pb)                             | 1000                                                                       |
| Mercury (Hg)                          | 1000                                                                       |
| Hexavalent Chromium (Cr(VI))          | 1000                                                                       |
| Polybrominated biphenyls (PBBs)       | 1000                                                                       |
| Polybrominated diphenylethers (PBDEs) | 1000                                                                       |
| Bis(2-ethylhexyl) phthalate(DEHP)     | 1000                                                                       |
| Butyl benzyl phthalate(BBP)           | 1000                                                                       |
| Dibutyl phthalate(DBP)                | 1000                                                                       |
| Diisobutyl phthalate(DIBP)            | 1000                                                                       |

Disclaimers:

This XRF Screening report is for reference purposes only. The applicant shall make its/his/her own judgment as to whether the information provided in this XRF screening report is sufficient for its/his/her purposes.

The result shown in this XRF screening report will differ based on various factors, including but not limited to, the sample size, thickness, area, surface flatness, equipment parameters and matrix effect (e.g. plastic, rubber, metal, glass, ceramic etc.). Further wet chemical pre-treatment with relevant chemical equipment analysis are required to obtain quantitative data.

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**B. The Test Results of Chemical Method:**

Test method:

Lead & Cadmium Content:

With reference to IEC 62321-5:2013, by acid digestion and analysis was performed by inductively coupled plasma atomic emission spectrometer (ICP-AES)

Mercury Content:

With reference to IEC 62321-4:2013, by acid digestion and analysis was performed by inductively coupled plasma atomic emission spectrometer (ICP-AES)

Hexavalent Chromium Content:

With reference to IEC 62321-7-1:2013, by alkaline digestion and analysis was performed by UV-visible spectrophotometer (UV-Vis)

PBBs & PBDEs Content:

With reference to IEC 62321-6:2015, by solvent extraction and analysis was performed by gas chromatographic-mass spectrometer (GC-MS)

Phthalates Content:

With reference to IEC 62321-8:2017, by gas chromatography-mass spectrometry (GC-MS)

**1) The test results of Lead (Pb)**

| Item              | Unit     | MDL      | Results     |             | Limit      |
|-------------------|----------|----------|-------------|-------------|------------|
|                   |          |          | (1)         | (2)         |            |
| Lead Content (Pb) | mg/kg    | 2        | 38          | 21          | 1000 mg/kg |
| <b>Conclusion</b> | <b>/</b> | <b>/</b> | <b>Pass</b> | <b>Pass</b> | <b>/</b>   |

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## 2) The test results of PBBs & PBDEs

| Item                                                   | Unit  | MDL | Results |      | Limit      |
|--------------------------------------------------------|-------|-----|---------|------|------------|
|                                                        |       |     | 1       | 2    |            |
| <b>Polybrominated Biphenyls (PBBs)</b>                 |       |     |         |      |            |
| Monobromobiphenyl                                      | mg/kg | 5   | N.D.    | N.D. |            |
| Dibromobiphenyl                                        | mg/kg | 5   | N.D.    | N.D. |            |
| Tribromobiphenyl                                       | mg/kg | 5   | N.D.    | N.D. |            |
| Tetrabromobiphenyl                                     | mg/kg | 5   | N.D.    | N.D. |            |
| Pentabromobiphenyl                                     | mg/kg | 5   | N.D.    | N.D. |            |
| Hexabromobiphenyl                                      | mg/kg | 5   | N.D.    | N.D. |            |
| Heptabromobiphenyl                                     | mg/kg | 5   | N.D.    | N.D. |            |
| Octabromobiphenyl                                      | mg/kg | 5   | N.D.    | N.D. |            |
| Nonabromodiphenyl                                      | mg/kg | 5   | N.D.    | N.D. |            |
| Decabromodiphenyl                                      | mg/kg | 5   | N.D.    | N.D. |            |
| Total content                                          | mg/kg | /   | N.D.    | N.D. | 1000 mg/kg |
| <b>Polybrominated Diphenylethers (PBDEs)(Mon-Deca)</b> |       |     |         |      |            |
| Monobromodiphenyl ether                                | mg/kg | 5   | N.D.    | N.D. |            |
| Dibromodiphenyl ether                                  | mg/kg | 5   | N.D.    | N.D. |            |
| Tribromodiphenyl ether                                 | mg/kg | 5   | N.D.    | N.D. |            |
| Tetrabromodiphenyl ether                               | mg/kg | 5   | N.D.    | N.D. |            |
| Pentabromodiphenyl ether                               | mg/kg | 5   | N.D.    | N.D. |            |
| Hexabromodiphenyl ether                                | mg/kg | 5   | N.D.    | N.D. |            |
| Heptabromodiphenyl ether                               | mg/kg | 5   | N.D.    | N.D. |            |
| Octabromodiphenyl ether                                | mg/kg | 5   | N.D.    | N.D. |            |
| Nonabromodiphenyl ether                                | mg/kg | 5   | N.D.    | N.D. |            |
| Decabromodiphenyl ether                                | mg/kg | 5   | N.D.    | N.D. |            |
| Total content                                          | mg/kg | /   | N.D.    | N.D. | 1000 mg/kg |

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| Item                                 | Unit  | MDL | Results |      |      |      |      | Limit      |
|--------------------------------------|-------|-----|---------|------|------|------|------|------------|
|                                      |       |     | (1)     | (2)  | (3)  | (4)  | (5)  |            |
| Dibutyl Phthalate(DBP)               | mg/kg | 50  | N.D.    | N.D. | N.D. | N.D. | N.D. | 1000 mg/kg |
| Benzylbutyl Phthalate(BBP)           | mg/kg | 50  | N.D.    | N.D. | N.D. | N.D. | N.D. | 1000 mg/kg |
| Bis(2-ethylhexyl)<br>Phthalate(DEHP) | mg/kg | 50  | N.D.    | N.D. | N.D. | N.D. | N.D. | 1000 mg/kg |
| Diisobutyl phthalate(DIBP)           | mg/kg | 50  | N.D.    | N.D. | N.D. | N.D. | N.D. | 1000 mg/kg |

| Item                                 | Unit  | MDL | Results |      |      |      |    | Limit      |
|--------------------------------------|-------|-----|---------|------|------|------|----|------------|
|                                      |       |     | (6)     | (7)  | (8)  | (9)  | -- |            |
| Dibutyl Phthalate(DBP)               | mg/kg | 50  | N.D.    | N.D. | N.D. | N.D. | -- | 1000 mg/kg |
| Benzylbutyl Phthalate(BBP)           | mg/kg | 50  | N.D.    | N.D. | N.D. | N.D. | -- | 1000 mg/kg |
| Bis(2-ethylhexyl)<br>Phthalate(DEHP) | mg/kg | 50  | N.D.    | N.D. | N.D. | N.D. | -- | 1000 mg/kg |
| Diisobutyl phthalate(DIBP)           | mg/kg | 50  | N.D.    | N.D. | N.D. | N.D. | -- | 1000 mg/kg |

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Note:

- N.D. = Not Detected or less than MDL
- mg/kg = ppm
- MDL = Method Detection Limit
- Photo appendix is included.

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## Appendix

### Photograph of Sample

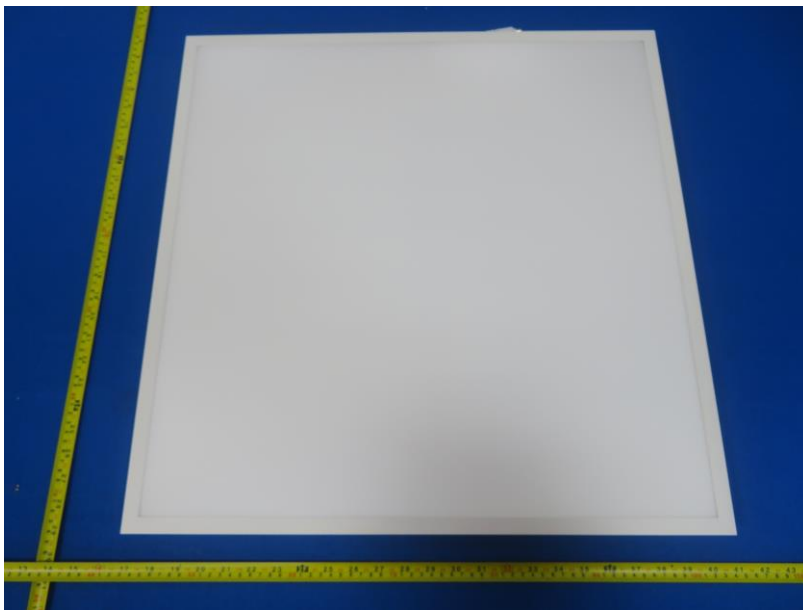


Fig.1



Fig.2

AOCE authenticate the photo on original report only

\*\*\*\*\* End of Report \*\*\*\*\*