

Visual Comfort & Co.

TEST REPORT

SCOPE OF WORK

LM-79 testing report

REPORT NUMBER

241212122GZU-002

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REVISION DATE

None

NUMBER OF PAGES

13

DOCUMENT CONTROL NUMBER

Report format for LM-79_G

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Report No.: 241212122GZU-002

TEST REPORT

TEST OF ONE LED LUMINAIRE

MODEL NO. KWTB22027XX

Remark: "XX" are denoted appearance color.

RENDERED TO

Visual Comfort & Co.

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| | |
|---|---|
| <u>TEST:</u> | Electrical and Photometric as required to the IES LM-79 test standard. |
| <u>AUTHORIZATION:</u> | The testing performed was authorized by signed quote number: QGZ241210128. |
| <u>STANDARDS USED:</u> | The following American National Standards or Illuminating Engineering Society of North America Test Guides were used in part or totally to test each specimen: |
| IES LM-79-19 | Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products |
| ANSI C78.377-2017 (R2022) | Specifications of the Chromaticity of Solid State Lighting Products |
| <u>DESCRIPTION OF SAMPLE:</u> | The client submitted one sample of model KWTB22027XX. The sample was received by Intertek in undamaged condition and tested as received. The sample designation was S241212122-002. |
| <u>MANUFACTURER /FACTORY & ADDRESS:</u> | Guangzhou Xiongyi Precision Metalworking Co., Ltd Hantang Industrial Zone, Langbian Village, Shiji Town, Panyu District, Guangzhou City, Guangdong Province, China 511450 |
| <u>DATES OF TESTS:</u> | 06 January 2025 |
| <u>ISSUED BY:</u> | Intertek Testing Services Shenzhen Ltd. Guangzhou Branch |
| <u>TEST LOCATION:</u> | Room101/301/401/102/202/302/402/502/602/702/802, No. 7-2, Caipin Road, Huangpu District, Guangzhou, Guangdong, China |

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TEST REPORT

SUMMARY

| | |
|---------------|----------------|
| Model Number: | KWTB22027XX |
| Description: | LED Luminaries |
| Brand Name: | -- |

Test Condition: 120V, 60Hz For KWTB22027XX

| Criteria | Result |
|------------------------------------|-----------|
| Total Lumen Output | 161.8 lm |
| Total Power | 8.7 W |
| Luminaire Efficacy | 18.6 lm/W |
| S/MH(C0/180) | 1.18 |
| S/MH(C90/270) | 2.35 |
| Correlated Color Temperature (CCT) | 2503 K |
| Color Rendering Index (CRI) | 88 |
| R9 | 55 |
| Chromaticity Coordinate (x) | 0.4829 |
| Chromaticity Coordinate (y) | 0.4237 |
| Chromaticity Coordinate (u') | 0.2713 |
| Chromaticity Coordinate (v') | 0.5357 |

Remark:

N/A

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TEST REPORT

EQUIPMENT LIST

| Equipment Used | Model Number | Control Number |
|-------------------------------------|--------------|----------------|
| Goniophotometer System | Go-R5000 | SA063-16 |
| KONICA MINOLTA - Illuminance meter | CX-2B_WL | SA063-16-01 |
| Standard Lamp | D215S | SA063-16-06 |
| Digital Power Meter | PLM3000 | SA063-16-09 |
| AC power source for Goniophotometer | PCR-1000WH | SA063-16-10 |
| Temperature Meter | S500-TH | SA047-182 |

GENERAL REMARK

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When determining for test conclusion, measurement uncertainty of tests has been considered.

Throughout this report a ☐ comma ☒ point is used as the decimal separator.

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TEST REPORT

TEST METHOD

Seasoning in Sample Orientation – LED Products

No seasoning was performed in accordance with IES LM-79

Light Distribution and Output Measurements

Light Distribution and total light output (luminous flux) were measured using a Go-R5000 Type-C Rotating Mirror Goniophotometer. Temperature 25°C and relative humidity of 60% was measured at a position in the testing laboratory.

The lamp rotates only around the fixed vertical axle in the prescribed burning position. The lamp and mirror permit the measurement of luminous intensity at the direction of any horizontal or vertical angle without tilting the lamp. The lamp was allowed to stabilize before measurements were made.

Chromaticity Measurements

Chromaticity was measured using a 2 meters integrating sphere spectral lamp measurement system, 4 π geometry, with an interior coating reflectance no less than 95 %. Temperature was measured at a position inside the sphere shielded from direct light. Relative humidity of 65% was measured at a position in the testing laboratory.

Spectral radiant flux measurements were made using spectroradiometer attached to the detector port of the integrating sphere. Each lamp was allowed to stabilise before measurements were made. The calibration of the integrating sphere spectroradiometer system is by the reference/standard lamps which are traceable to National Institute of Metrology P.R. CHINA. Lamp efficacy (lumens per watt) for each lamp model was then computed based on the luminous flux result. Electrical measurements including voltage, power and power factor were measured using YOKOGAWA - Digital Power Meter., model WT310E.

Correction factor (self-absorption) has been considered when doing measurement.

Standard lamp used for Goniophotometer method:

Model: D215S

Current: 4.809A DC

Standard lamp used for integrating sphere:

Model: D204

Current: 3.948A DC

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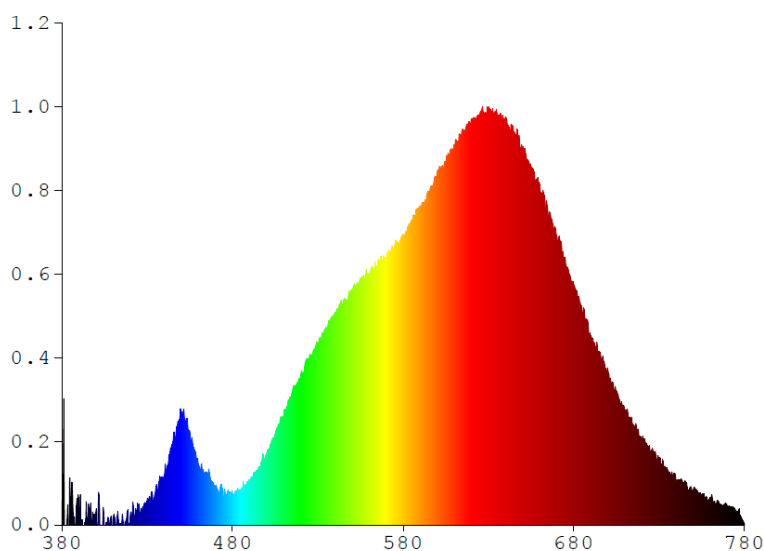
TEST REPORT

RESULTS OF TESTS

Test Condition: 120V, 60Hz For KWTB22027XX

Spectral Distribution over Visible Wavelengths

| nm | mW/nm | nm | mW/nm | nm | mW/nm | nm | mW/nm | nm | mW/nm |
|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|
| 380 | 0.0493 | 480 | 0.0703 | 580 | 0.7744 | 680 | 0.6396 | 780 | 0.0004 |
| 385 | 0.0215 | 485 | 0.0960 | 585 | 0.8124 | 685 | 0.5607 | | |
| 390 | 0.0331 | 490 | 0.1208 | 590 | 0.8364 | 690 | 0.4996 | | |
| 395 | 0.0183 | 495 | 0.1491 | 595 | 0.8876 | 695 | 0.4511 | | |
| 400 | 0.0429 | 500 | 0.1907 | 600 | 0.9459 | 700 | 0.4082 | | |
| 405 | 0.0000 | 505 | 0.2416 | 605 | 0.9681 | 705 | 0.3550 | | |
| 410 | 0.0186 | 510 | 0.2959 | 610 | 1.0104 | 710 | 0.3011 | | |
| 415 | 0.0003 | 515 | 0.3565 | 615 | 1.0543 | 715 | 0.2661 | | |
| 420 | 0.0202 | 520 | 0.3964 | 620 | 1.0787 | 720 | 0.2242 | | |
| 425 | 0.0540 | 525 | 0.4489 | 625 | 1.0975 | 725 | 0.1924 | | |
| 430 | 0.0672 | 530 | 0.4809 | 630 | 1.1154 | 730 | 0.1677 | | |
| 435 | 0.0959 | 535 | 0.5180 | 635 | 1.0945 | 735 | 0.1461 | | |
| 440 | 0.1309 | 540 | 0.5649 | 640 | 1.0871 | 740 | 0.1163 | | |
| 445 | 0.2147 | 545 | 0.5988 | 645 | 1.0432 | 745 | 0.1166 | | |
| 450 | 0.2866 | 550 | 0.6268 | 650 | 1.0047 | 750 | 0.0930 | | |
| 455 | 0.2310 | 555 | 0.6559 | 655 | 0.9481 | 755 | 0.0797 | | |
| 460 | 0.1584 | 560 | 0.6693 | 660 | 0.9064 | 760 | 0.0742 | | |
| 465 | 0.1407 | 565 | 0.6927 | 665 | 0.8183 | 765 | 0.0572 | | |
| 470 | 0.0972 | 570 | 0.7104 | 670 | 0.7689 | 770 | 0.0502 | | |
| 475 | 0.0620 | 575 | 0.7439 | 675 | 0.6874 | 775 | 0.0350 | | |



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For KWTB22027XX

Total operation burning time: 60 minutes

Stabilization time: 30 minutes

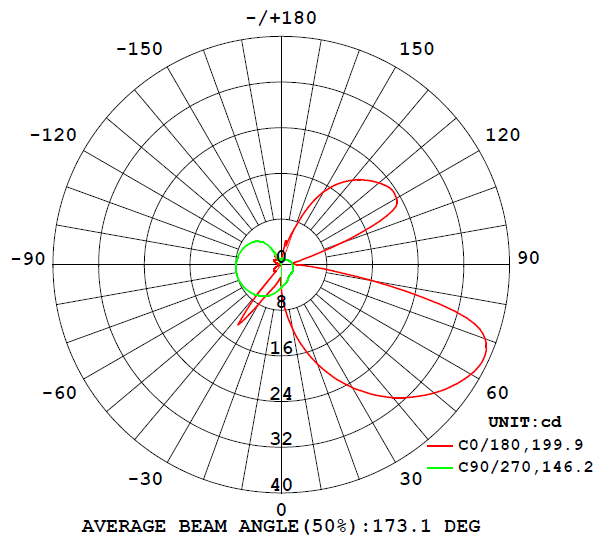
Photometric Measurements at 25°C – Distribution Method

| Intertek Sample No. | Base Orientation | Correlated Color Temperature (K) | CRI | R9 | CIE 31' | CIE 31' | CIE 76' | CIE 76' |
|---------------------------|---------------------|--|-----|----|-------------|-------------|-------------|-------------|
| | | | | | Chromaticit | Chromaticit | Chromaticit | Chromaticit |
| | | | | | y | y | y | y |
| | | | | | Coordinate | Coordinate | Coordinate | Coordinate |
| | | | | | (x) | (y) | (u') | (v') |
| KWTB22027XX | | | | | | | | |
| S2412121 22-002 | base-up | 2503 | 88 | 55 | 0.4829 | 0.4237 | 0.2713 | 0.5357 |

Photometric and Electrical Measurements at 25°C – Distribution Method

| Intertek Sample No. | Base Orientation | Input Voltage (Vac) | Input Current (mA) | Input Power (Watts) | Input Power Factor | Absolute Luminous Flux (Lumens) | Lumen Efficacy (Lumens Per Watt) |
|---------------------------|---------------------|---------------------------|--------------------------|---------------------------|--------------------------|--|---|
| KWTB22027XX | | | | | | | |
| S2412121 22-002 | base-up | 120.1 | 85.3 | 8.7 | 0.852 | 161.8 | 18.6 |

Intensity (Candlepower) Summary at 25°C - Candelas



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For KWTB22027XX

Intensity (Candlepower) Summary at 25°C - Candelas

| V \ H(°) | 0 | 22.5 | 45 | 67.5 | 90 |
|-------------|------|------|------|------|-----|
| 0 | 4.2 | 4.2 | 5.1 | 4.6 | 4.0 |
| 5 | 7.8 | 7.4 | 7.4 | 5.7 | 3.7 |
| 10 | 11.4 | 10.6 | 9.8 | 6.8 | 3.5 |
| 15 | 15.0 | 13.9 | 12.2 | 7.9 | 3.3 |
| 20 | 18.5 | 17.1 | 14.5 | 8.9 | 3.1 |
| 25 | 21.8 | 20.1 | 16.7 | 9.9 | 2.8 |
| 30 | 24.8 | 23.0 | 18.8 | 10.8 | 2.6 |
| 35 | 27.7 | 25.8 | 20.7 | 11.7 | 2.4 |
| 40 | 30.4 | 28.2 | 22.4 | 12.5 | 2.4 |
| 45 | 32.8 | 30.5 | 24.1 | 13.2 | 2.3 |
| 50 | 35.0 | 32.5 | 25.5 | 13.9 | 2.3 |
| 55 | 36.9 | 34.2 | 26.8 | 14.5 | 2.3 |
| 60 | 38.4 | 35.7 | 28.0 | 15.0 | 2.3 |
| 65 | 39.1 | 37.0 | 29.0 | 15.5 | 2.2 |
| 70 | 38.0 | 38.0 | 29.8 | 15.8 | 2.2 |
| 75 | 31.4 | 38.7 | 30.4 | 16.1 | 2.1 |
| 80 | 16.1 | 39.1 | 30.9 | 16.3 | 2.1 |
| 85 | 6.4 | 39.2 | 31.1 | 16.4 | 2.0 |
| 90 | 3.0 | 39.0 | 31.2 | 16.3 | 2.0 |
| 95 | 2.0 | 38.9 | 31.0 | 16.2 | 1.9 |
| 100 | 2.3 | 38.6 | 30.7 | 16.0 | 1.8 |
| 105 | 4.5 | 38.3 | 30.1 | 15.7 | 1.8 |
| 110 | 11.1 | 37.4 | 29.2 | 15.2 | 1.7 |
| 115 | 20.5 | 36.0 | 28.1 | 14.7 | 1.6 |
| 120 | 23.3 | 34.0 | 26.7 | 14.0 | 1.5 |
| 125 | 23.3 | 31.6 | 25.1 | 13.2 | 1.5 |
| 130 | 22.3 | 28.7 | 23.1 | 12.3 | 1.4 |
| 135 | 21.0 | 25.6 | 20.9 | 11.2 | 1.3 |
| 140 | 19.4 | 22.4 | 18.3 | 10.1 | 1.2 |
| 145 | 17.3 | 19.1 | 15.5 | 8.8 | 1.1 |
| 150 | 14.7 | 15.6 | 12.7 | 7.4 | 1.1 |
| 155 | 11.1 | 11.5 | 9.6 | 6.1 | 1.1 |
| 160 | 6.8 | 6.4 | 7.2 | 4.9 | 1.1 |
| 165 | 3.7 | 4.4 | 5.1 | 3.5 | 1.1 |
| 170 | 4.2 | 3.6 | 3.0 | 2.6 | 1.2 |
| 175 | 0.2 | 0.4 | 0.5 | 0.8 | 0.8 |
| 180 | 0.4 | 0.5 | 0.8 | 0.3 | 0.3 |

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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For KWTB22027XX

Zonal Lumen Summary and Percentages at 25°C

| Zone | Lumens (lm) | % Luminaire (%) |
|-------------|-------------|-----------------|
| KWTB22027XX | | |
| 0-30 | 7.1 | 4.4 |
| 0-40 | 15.2 | 9.4 |
| 0-60 | 39.1 | 24.2 |
| 0-90 | 87.2 | 53.9 |
| 60-90 | 48.1 | 29.7 |
| 0-180 | 161.8 | 100.0 |

Beam Angle

Total Beam Angle(°)

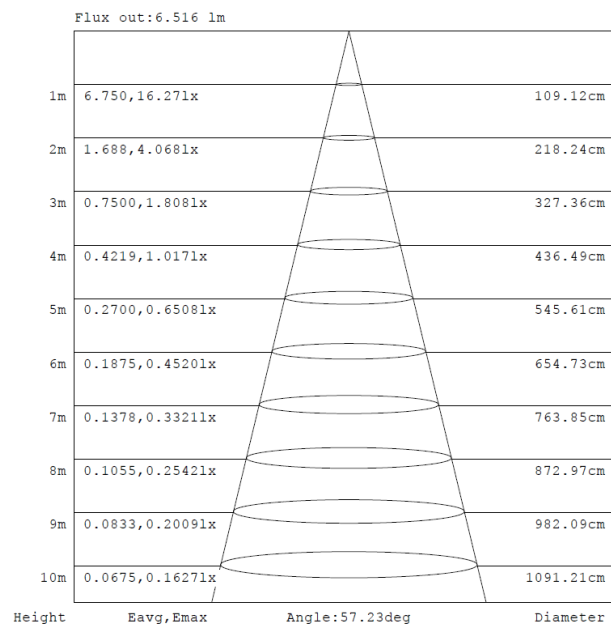
173.1

Illumination Plots

Model No.: KWTB22027XX

Mount Height: 2.5 m

Illuminance - Cone of Light



Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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TEST REPORT

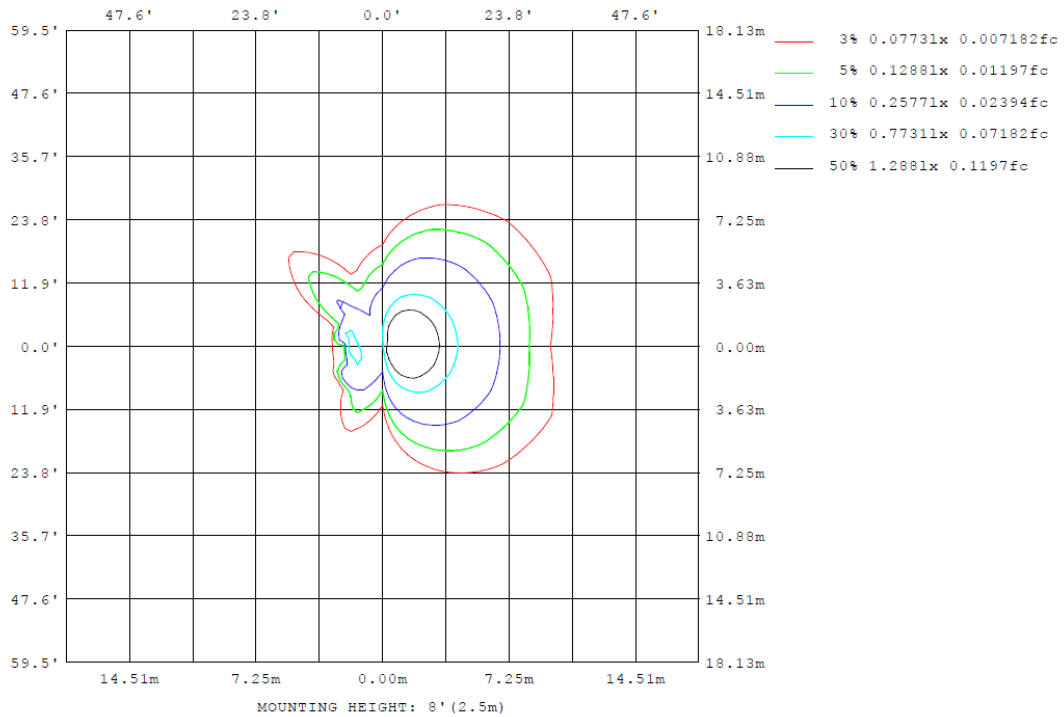
RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For KWTB22027XX

Model No.: KWTB22027XX

Mount Height: 2.5 m

Isoillumination Plot



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TEST REPORT

RESULTS OF TESTS (cont'd)

Test Condition: 120V, 60Hz For KWTB22027XX

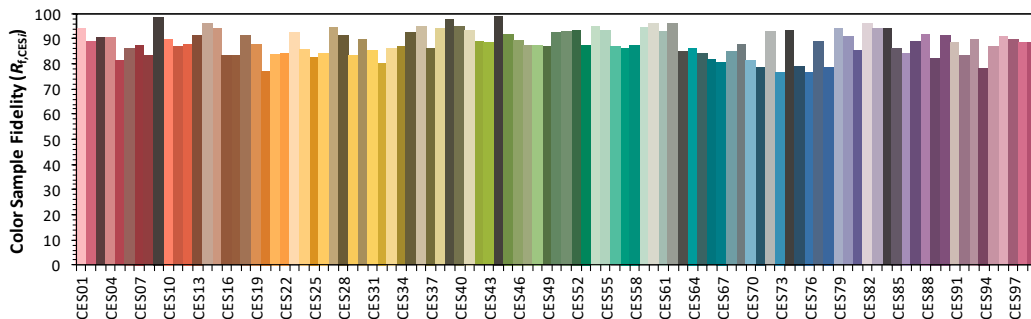
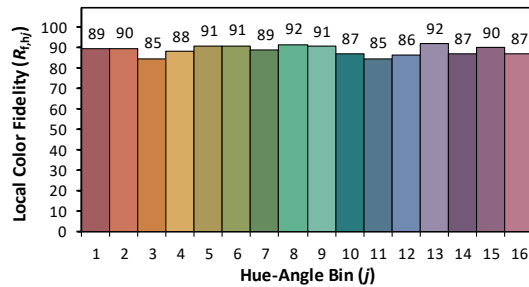
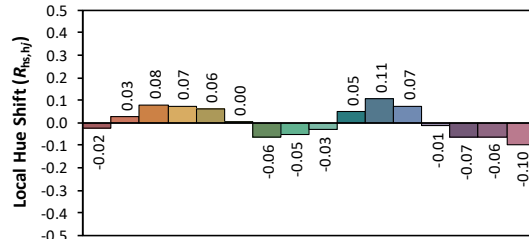
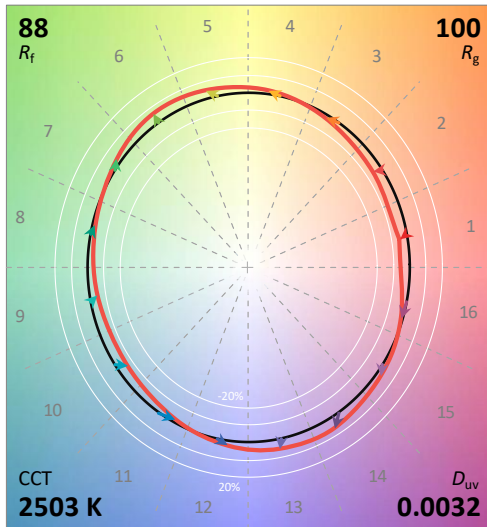
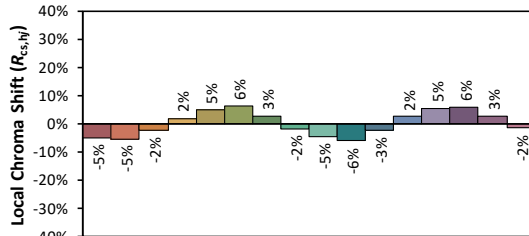
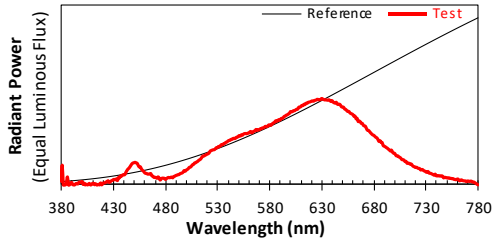
ANSI/IES TM-30-18 Color Rendition Report

Source: User SPD

Manufacturer: Visual Comfort & Co.

Date: 2025/1/6

Model: KWTB22027XX



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x 0.4829
 y 0.4237
 u' 0.2713
 v' 0.5357

CIE 13.3-1995
(CRI)

R_a 88

R_g 55

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

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TEST REPORT

PRODUCT PICTURE (not to scale)



External view of KWTB22027XX

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TEST REPORT

PRODUCT PICTURE (not to scale)



View of LED driver A122-1201000ID



View of LED

In Charge Of Tests:

Done Ye

Done Ye
Engineer

Report Reviewed By

Shelley Ying

Shelley Ying
Reviewer

Attachment: None

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