Date of issue 2022-01-20
Version 1.0
Total pages 19

# Test report of
# IES LM-79-08
# Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

**Applicant:**

P.Q.L., Inc.

**Address:**

2285 Ward Avenue / Simi Valley, CA 93065

**For Product:**

Outdoor Pole/Arm-Mounted Area and Roadway Luminaires

**Model No.:**

STL3P-100W-3000K-B-MB-HC-P (TYPE III),
STL3P-100W-5700K-B-MB-HC-P (TYPE III)

**Test laboratory: Shenzhen Belling Efficiency Testing Lab Co., Ltd, 1Floor, No.1 Building, Meibaohe Industrial Park, Dalang Street, Longhua District, Shenzhen, Guangdong Prov.518101 China.**

Sam Chen

Jason zhou

**Complied by: Sam Chen** **Review by: Jason zhou**

**Project Engineer** **Technical Manager**

# 1 General

## 1.1 Product Information

| | |
|---|---|
| **Manufacturer** | P.Q.L., Inc. |
| **Manufacturer Address** | 2285 Ward Avenue<br>Simi Valley, CA 93065 |
| **Brand Name** | P.Q.L., Inc. |
| **Luminaire Type** | Outdoor Pole/Arm-Mounted Area and Roadway Luminaires |
| **Model Number** | STL3P-100W-3000K-B-MB-HC-P (TYPE III),<br>STL3P-100W-5700K-B-MB-HC-P (TYPE III) |
| **Rated Inputs** | AC 277-480V 50/60Hz |
| **Rated Power** | 100 W |
| **Nominal CCT** | 3000K, 5700K |
| **Dimming Capability** | Continuous |
| **Integral Control Sensors** | No |
| **Date of Receipt Samples** | 2022-01-12 |
| **Date of test** | 2022-01-13 to 2022-01-18 |
| **Burning Time Before Test** | 0hour(For New Products) |

## 1.2 Standards or methods

- ANSI C78.377-2017:Specifications for the Chromaticity of Solid State Lighting Products
- ANSI C82.77-10:2014:Harmonic Emission Limits - Related Power Quality Requirements for Lighting Equipment - Solid State
- CIE Publication No.13.3-1995:Method of Measuring and Specifying Color Rendering of Light Sources
- IESNA LM-79-08 Approved Method: Electric & Photometric Measurement of Solid-state Lighting Products
- IES TM-15-11: Backlight, Uplight, and Glare (BUG) Ratings

Note: This report contains data that are not covered by the NVLAP accreditation. See the following description:

TM-15-11 test are not in NVLAP accreditation scope.

## 1.3 Equipment list

| Device | Manufacture | Model No. | Serial No. | Calibration due date |
|---|---|---|---|---|
| Goniophotometric System | SENSING | GMS-3000 | N.A | 2022-03-31 |
| AC Power Source | ALL POWER | APW-110N | 992257 | 2022-03-31 |
| Total Luminous Flux Standard Lamp | SENSING | 110V/100W | S1510065 | 2022-04-07 |
| Total Spectral Radiant Flux Standard Lamp | SENSING | 12V/20W | LSD12201731 | 2022-04-07 |
| Digital Power Meter | YOKOGAWA | WT310 | C2QM02030V | 2022-03-31 |
| Integral Sphere | SENSING | SPR-600M | N.A | 2022-03-31 |
| Digital Power Meter | YOKOGAWA | WT210 | 91L929742 | 2022-03-31 |
| Optical Color and Electrical Measurement System | SENSING | SPR-3000 | S1101108 | 2022-03-31 |
| Environment Measurer | XUYAO | HS-1 | N/A | 2022-04-03 |
| Environment Measurer | XUYAO | HS-1 | N/A | 2022-04-03 |
| Stop watch | KISLO | K610 | N/A | 2022-04-22 |
| Digital Anemometer | TECMAN | TD8901 | 026141 | 2022-09-08 |

Statement of Traceability: Shenzhen Belling Efficiency Testing Lab Co., Ltd attests that all calibration has been performed using suitable standards traceable to national primary standards and International System of Unit (SI).

# 2 Test conducted and method

## 2.1 Ambient Condition

The ambient temperature in which measurements are being taken was maintained at 25°C ±1°C, the air flow around the sample(s) being tested did not affect the performance.

## 2.2 Power Supply Characteristics

The AC power supply had a sinusoidal voltage wave shape at the prescribed frequency (60 Hz) such that the RMS summation of the harmonic components does not exceed 3 percent of the fundamental during operation of the test item.

The voltage of AC power supply (RMS voltage) applied to the device under test was regulated to within±0.2 percent under load.

## 2.3 Seasoning and Stabilization

No seasoning was performed in accordance with IESNA LM-79-08. And before the measurement, the sample was stabilized until the light output and power variations were less than 0.5% in 30 minutes intervals (3 readings, 15 minutes apart).

## 2.4 Integrating Sphere System

The system includes AC power source, digital power meter, DC power supply, spectrophotometer, and integrating sphere. The integrating sphere system is calibrated by standard light source before measurement. The system and standard light source has been calibrated regularly and traceable to the National Primary Standards. 4π geometry was used during measurement. The product was operated in its intended orientation in application and was recorded in this report.

Integrating Sphere Uncertainty: The uncertainty of the light output (luminous flux) measurements is U=1.8% (K=2), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is U=20K (K=2), at the 95% confidence level. The uncertainty of the CRI is U=1.8(K=2), at the 95% confidence level. The uncertainty of power meter AC current U=0.18% of rdg, AC Voltage U=0.16% of rdg, Power U=0.20% (K=2), at the 95% confidence level.

## 2.5 Goniophotometer System

The goniophotometer system is calibrated by standard light source before measurement. The standard light source has been calibrated regularly and traceable to the National Primary Standards.

Type C goniophotometer was used for measuring total luminous flux, luminous intensity distribution, and color spatial uniformity. The product was operated in its intended orientation in application and was recorded in this report. The method according to IESNA LM-79-08 following chapter.

Goniophotometer Uncertainty :The uncertainty of the luminous intensity is U=1.6% (K=2), at the 95% confidence level.

# 3 Test Result Summary

## 3.1 Integrating Sphere System (Total operating time for integrating sphere test: 1.0 hour)

### 3.1.1 Model Number: STL3P-100W-3000K-B-MB-HC-P (TYPE III)

**Electrical data**

| Input Voltage(V) | Frequency (Hz) | Input Current (A) | Power (W) | Power Factor |
|---|---|---|---|---|
| 277.07 | 60 | 0.368 | 101.57 | 0.995 |

**Photometric data**

| Luminous Flux (lm) | Efficacy (lm/W) | CCT (K) |
|---|---|---|
| 15083.79 | 148.5 | 3011 |

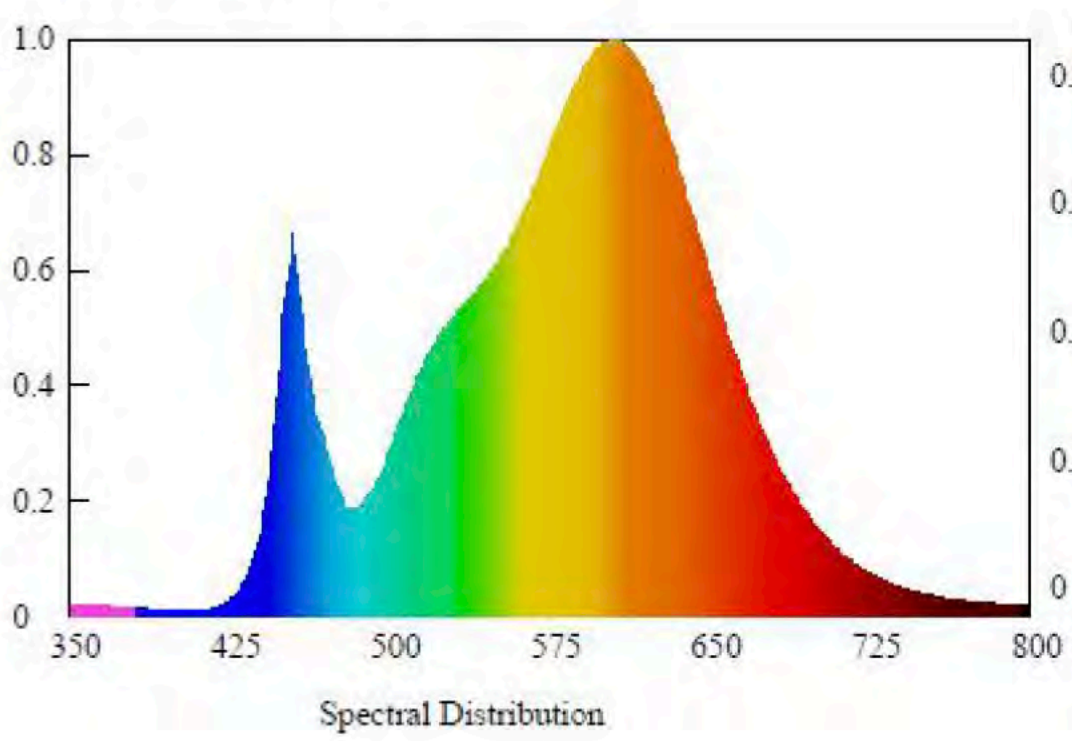
**Chromaticity Coordinate**

| Duv | x | y | u' | v' |
|---|---|---|---|---|
| -0.00131 | 0.4343 | 0.3999 | 0.2506 | 0.5193 |

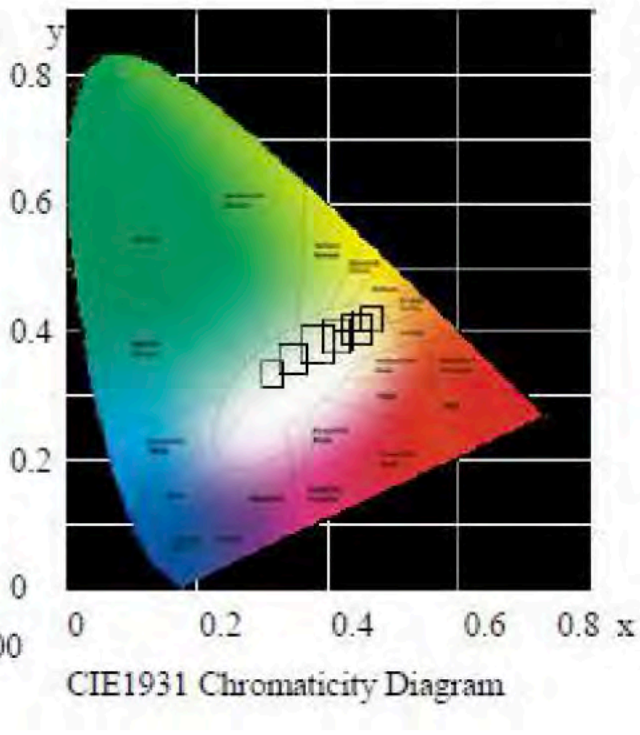
**Color Rendering**

| CRI | R9 | Rf | Rg | Rcs,h1(%) |
|---|---|---|---|---|
| 83.4 | 12 | 84 | 96 | -11 |

**Spectral Distribution**

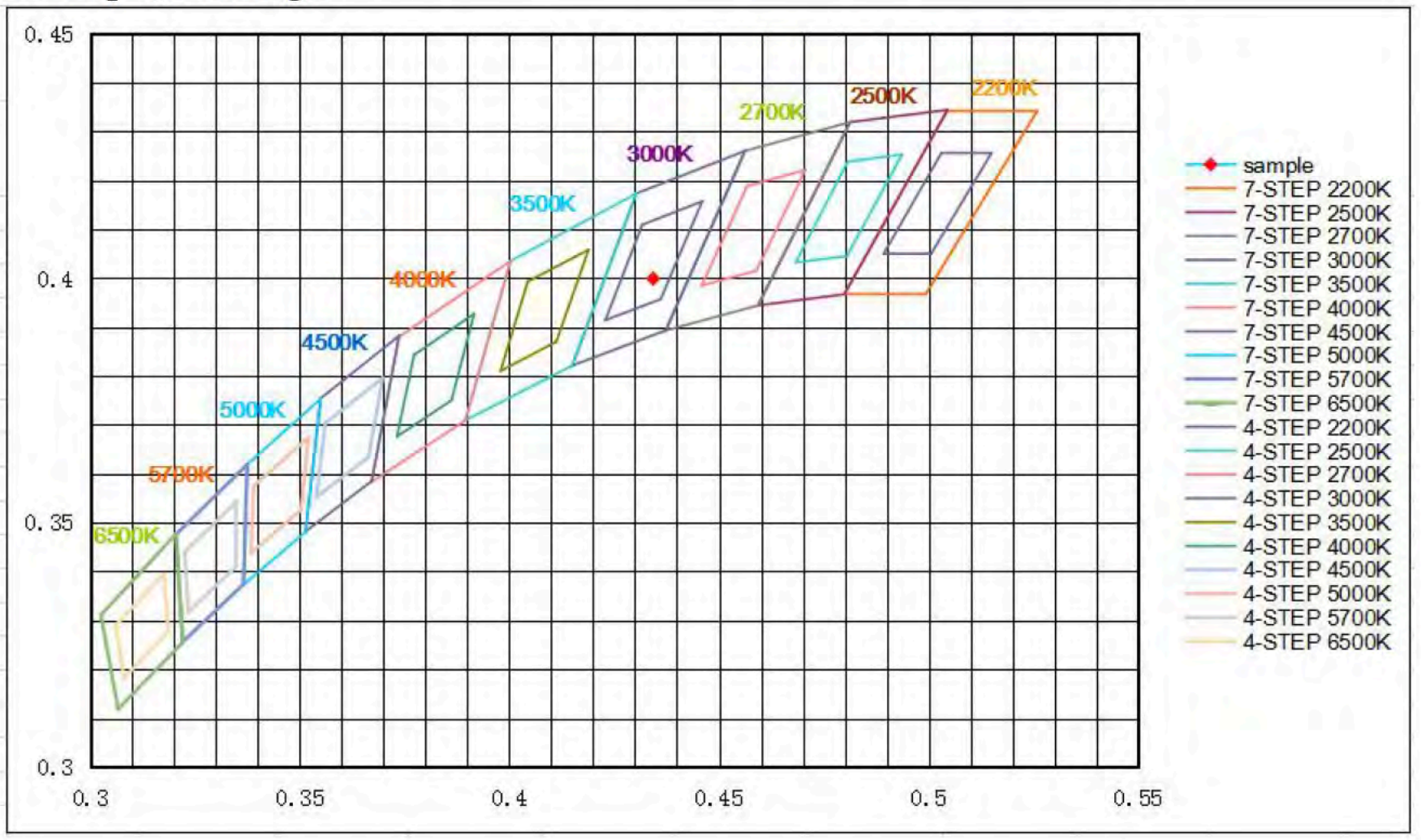



Spectral Distribution




CIE1931 Chromaticity Diagram

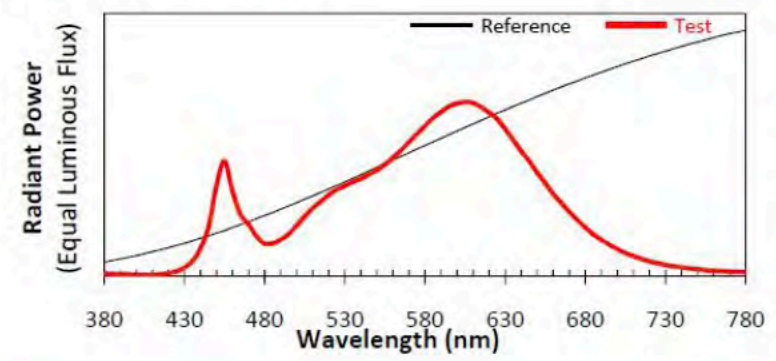
## 7/4 Step Quadrangle

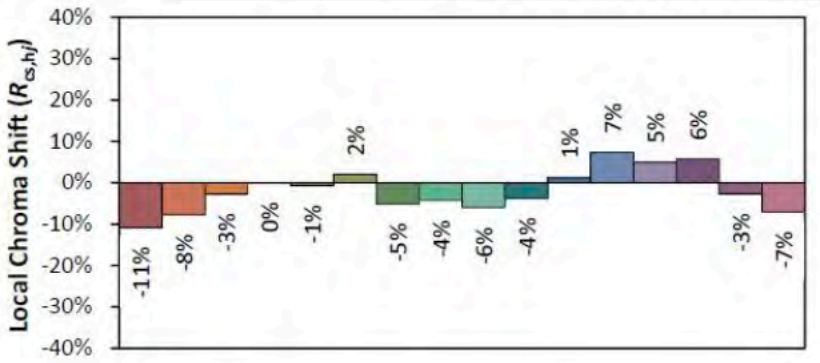


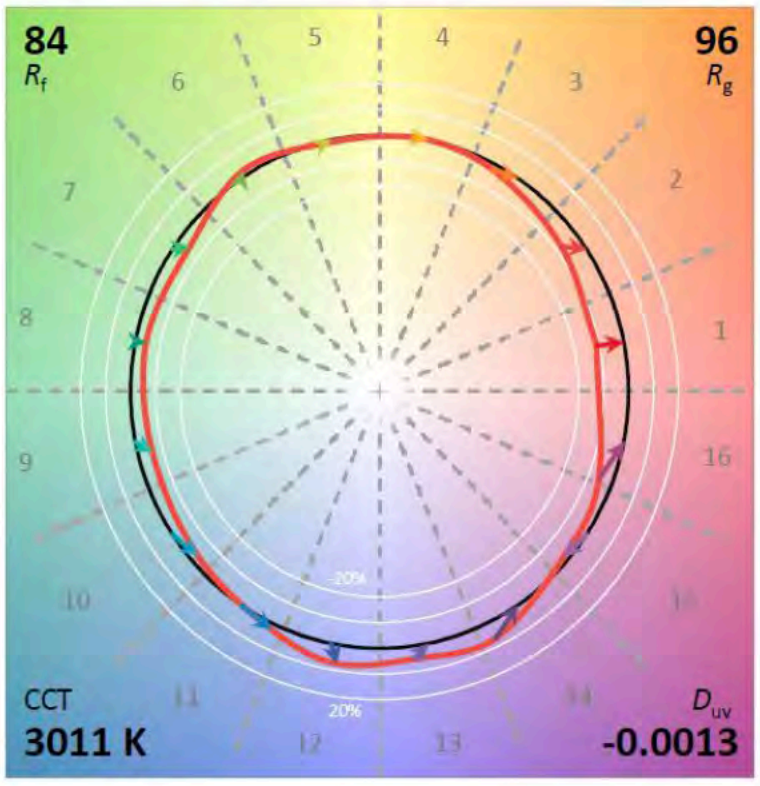
# ANSI/IES TM-30-18 Color Rendition Report

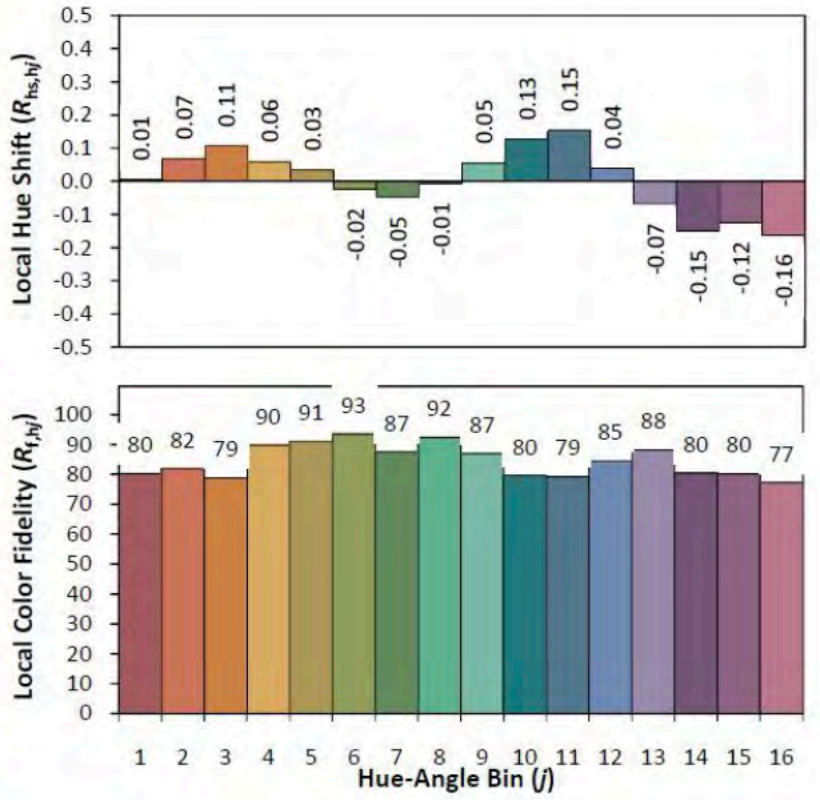
**Source:** BL220112006-9 **Manufacturer:** P.Q.L., Inc.

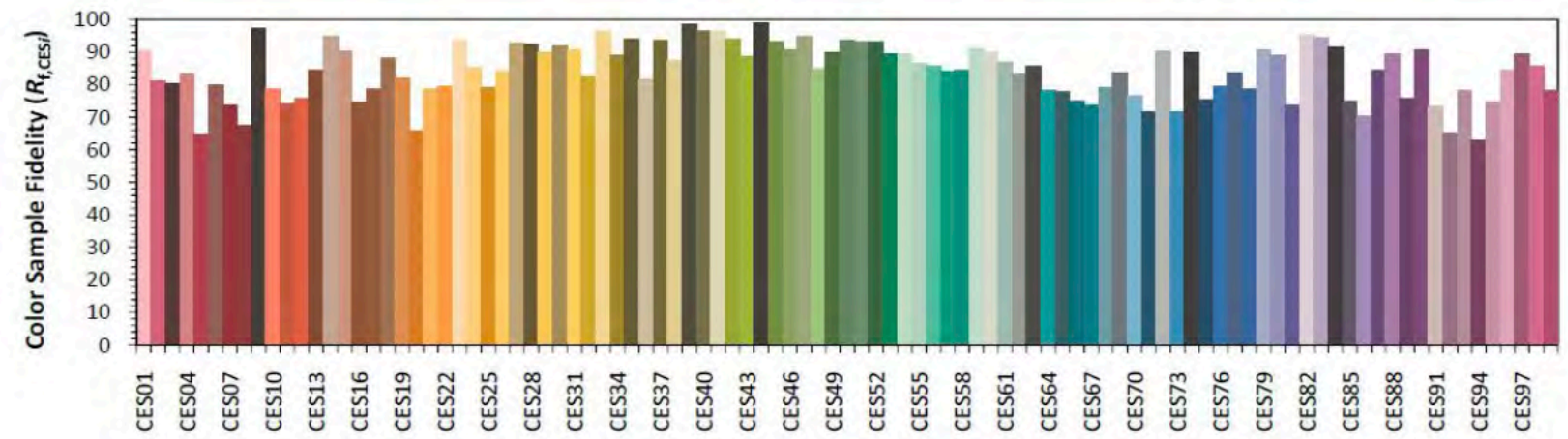
**Date:** 2022-01-20 **Model:** STL3P-100W-3000K-B-MB-HC-P (TYPE III)




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

| | |
|---|---|
| $x$ | 0.4343 |
| $y$ | 0.3999 |
| $u'$ | 0.2506 |
| $v'$ | 0.5193 |

CIE 13.3-1995 (CRI)

| | |
|---|---|
| $R_a$ | 83 |
| $R_9$ | 12 |

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

## 3.1.2 Model Number: STL3P-100W-5700K-B-MB-HC-P (TYPE III)

### Electrical data

| Input Voltage(V) | Frequency (Hz) | Input Current (A) | Power (W) | Power Factor |
|---|---|---|---|---|
| 277.02 | 60 | 0.368 | 101.35 | 0.995 |

### Photometric data

| Luminous Flux (lm) | Efficacy (lm/W) | CCT (K) |
|---|---|---|
| 15477.23 | 152.7 | 5544 |

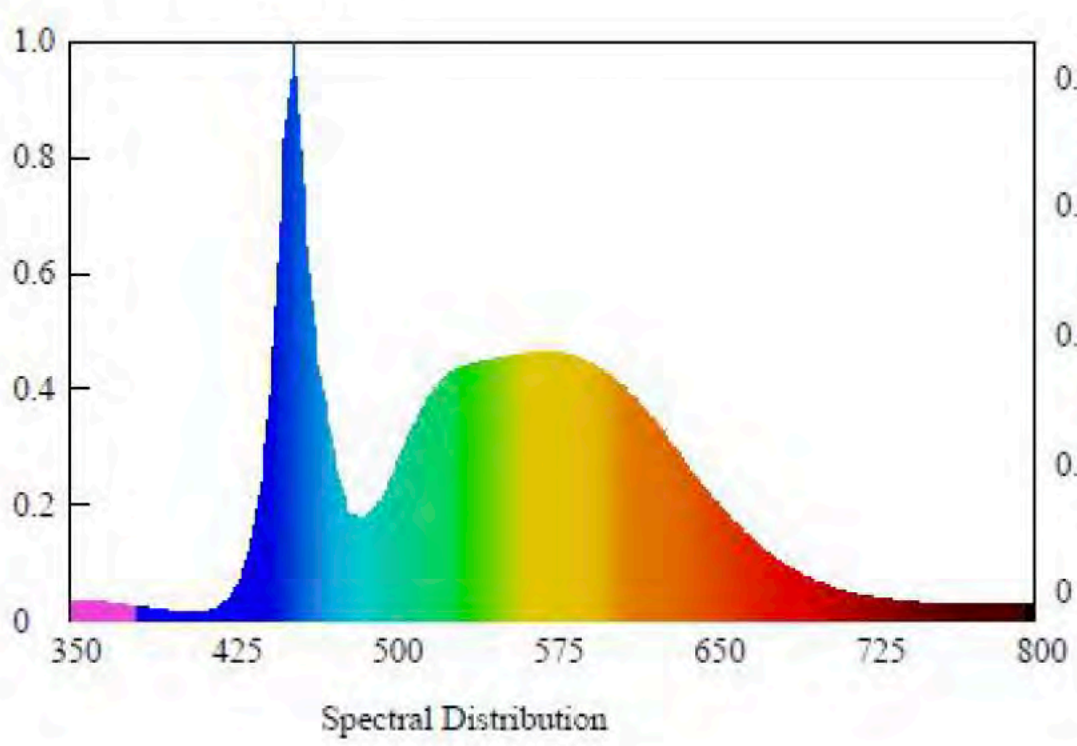
### Chromaticity Coordinate

| Duv | x | y | u' | v' |
|---|---|---|---|---|
| +0.0018 | 0.3314 | 0.3437 | 0.2052 | 0.4787 |

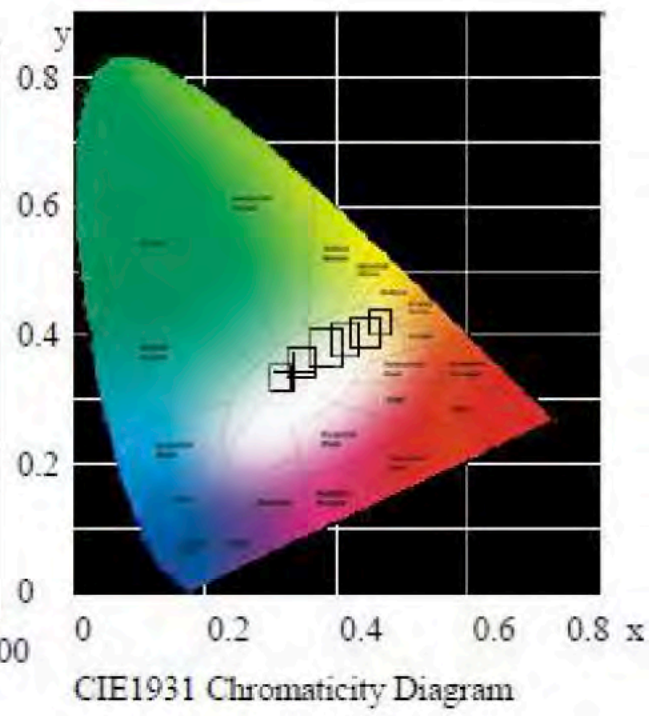
### Color Rendering

| CRI | R9 | Rf | Rg | Rcs,h1(%) |
|---|---|---|---|---|
| 82.8 | 13 | 82 | 95 | -12 |

### Spectral Distribution

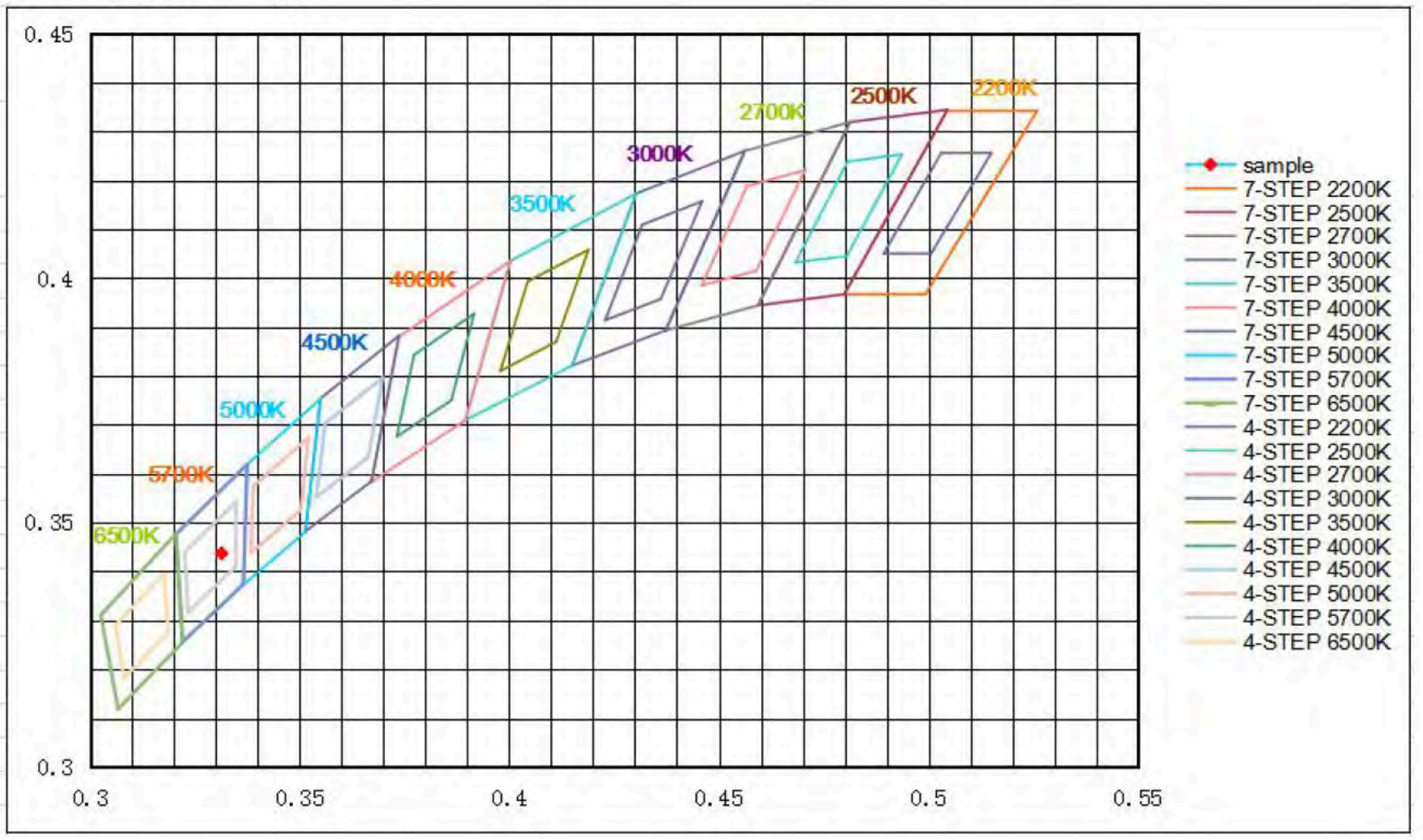



Spectral Distribution



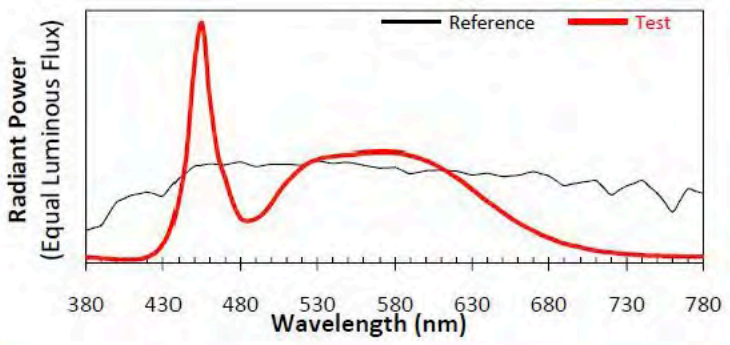

CIE1931 Chromaticity Diagram

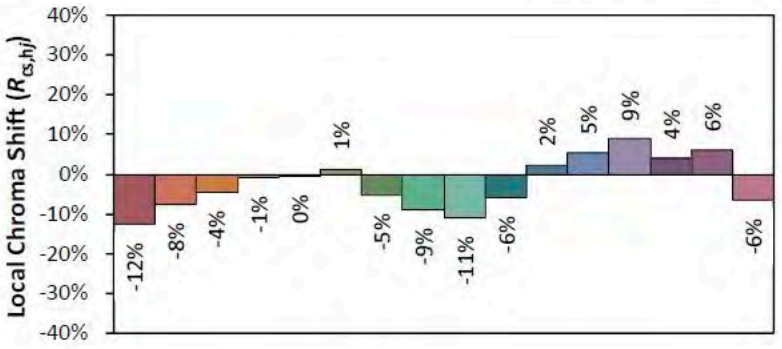
## 7/4 Step Quadrangle

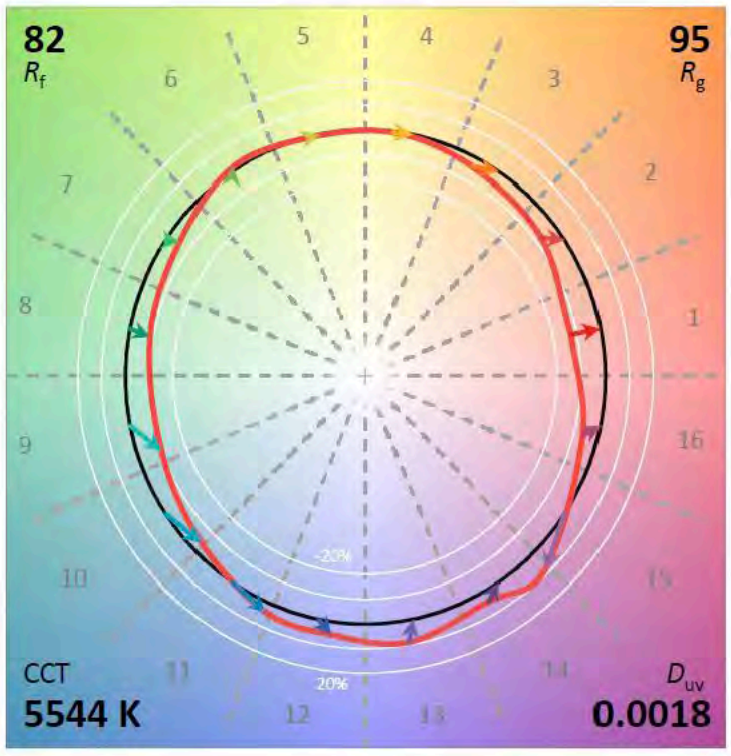


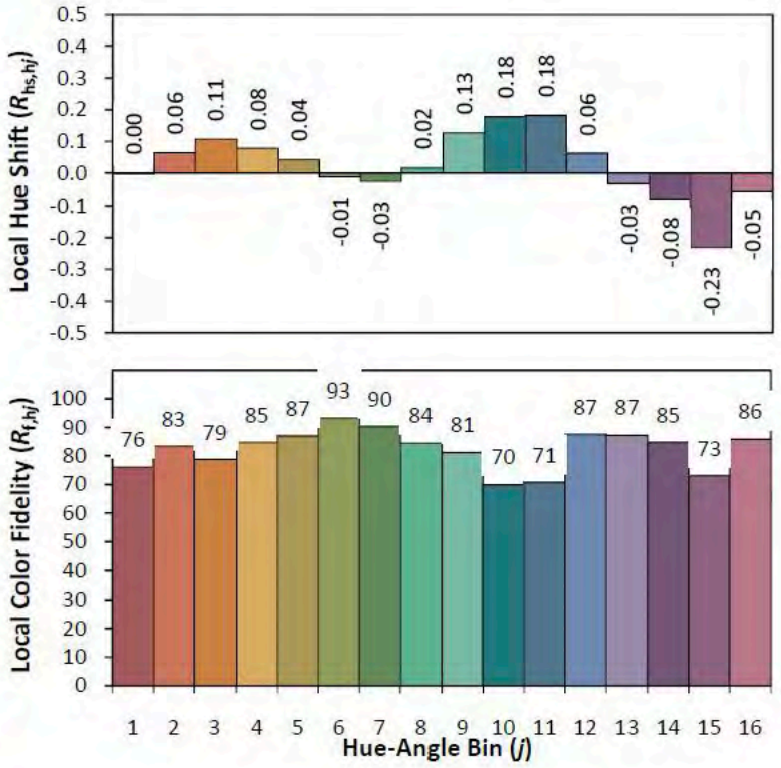
# ANSI/IES TM-30-18 Color Rendition Report

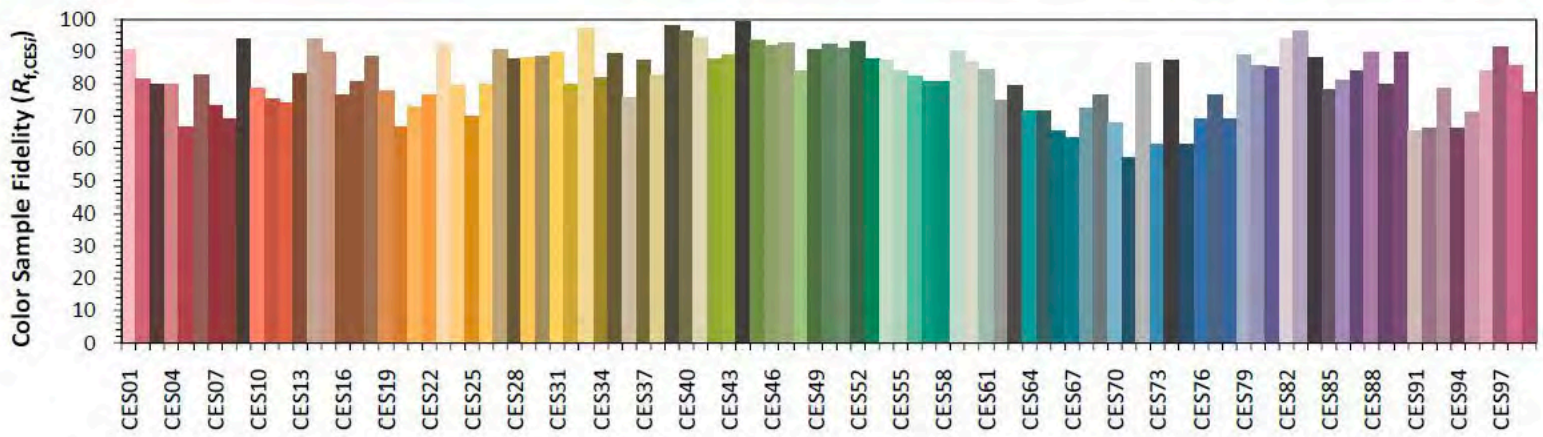
| | | | |
|---|---|---|---|
| **Source:** | BL220112006-9 | **Manufacturer:** | P.Q.L., Inc. |
| **Date:** | 2022-01-20 | **Model:** | STL3P-100W-5700K-B-MB-HC-P (TYPE III) |




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

| | |
|---|---|
| $x$ | 0.3314 |
| $y$ | 0.3437 |
| $u'$ | 0.2052 |
| $v'$ | 0.4787 |

CIE 13.3-1995 (CRI)

| | |
|---|---|
| $R_a$ | 83 |
| $R_9$ | 13 |

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

## 3.2 Goniophotometer System (Total operating time for luminous intensity distribution: 1.0 hour)

### 3.2.1 Model Number: STL3P-100W-3000K-B-MB-HC-P (TYPE III)

**Electrical data**

| Input Voltage(V) | Frequency (Hz) | Input Current (A) | Power (W) | Power Factor |
|---|---|---|---|---|
| 277.02 | 60 | 0.365 | 100.66 | 0.9953 |

**Photometric data**

| Luminous Flux (lm) | Efficacy (lm/W) | Zonal Lumen in 0-90°(%lm) | Zonal Lumen in 80-90°(%lm) |
|---|---|---|---|
| 14927.52 | 148.30 | 99.82 | 0.59 |

**IESNA Luminaire Flux Distribution Table:**

| | Lumens | % Luminaire |
|---|---|---|
| FL - Front-Low (0-30) | 1698.1 | 11.4 |
| FM - Front-Medium (30-60) | 5714.5 | 38.3 |
| FH - Front-High (60-80) | 1805.0 | 12.1 |
| FVH - Front-Very High (80-90) | 43.7 | 0.3 |
| BL - Back-Low (0-30) | 1362.6 | 9.1 |
| BM - Back-Medium (30-60) | 3278.8 | 22.0 |
| BH - Back-High (60-80) | 953.0 | 6.4 |
| BVH - Back-Very High (80-90) | 44.7 | 0.3 |
| UL - Uplight-Low (90-100) | 3.5 | 0.0 |
| UH - Uplight-High (100-180) | 23.7 | 0.2 |
| Total | 14927.6 | 100.0 |

| | |
|---|---|
| BUG Rating | B3-U2-G2 |

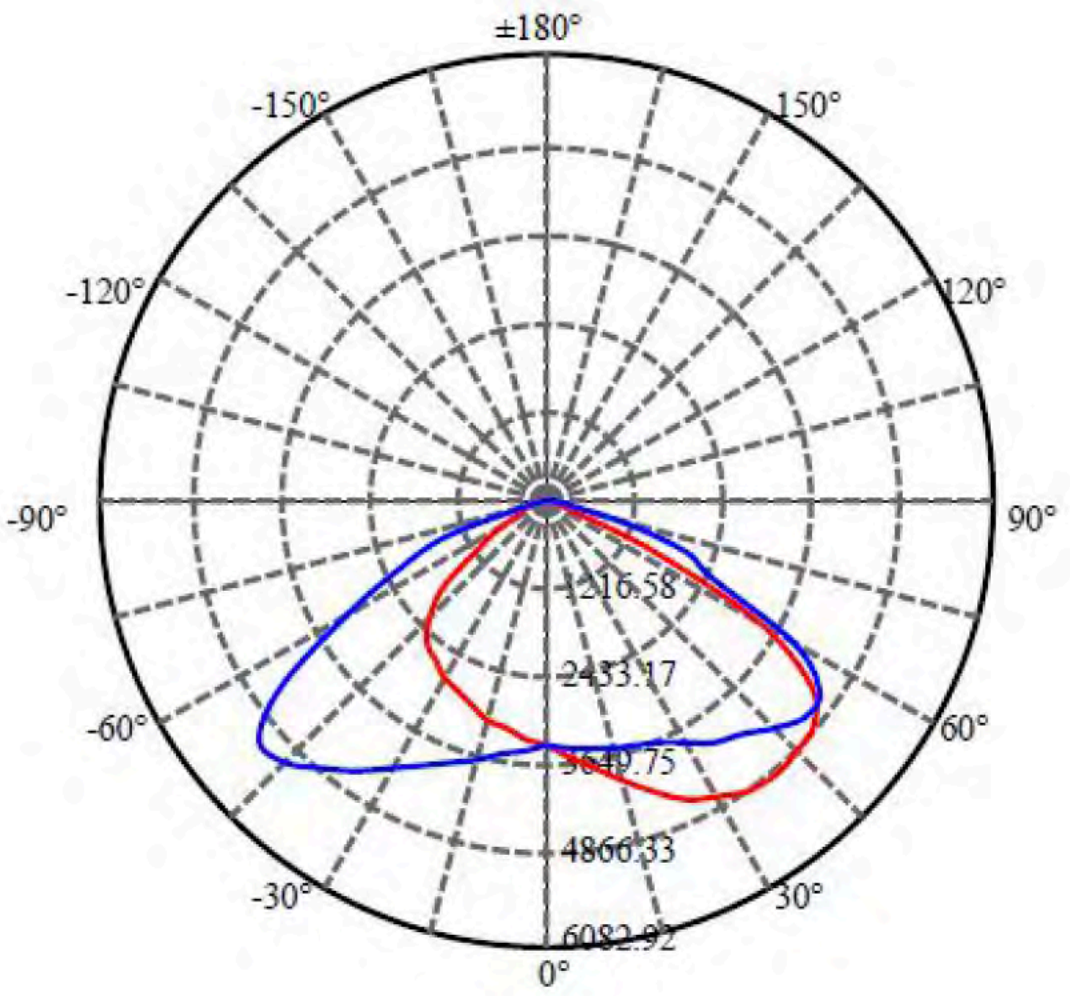
## Zonal Flux Diagram

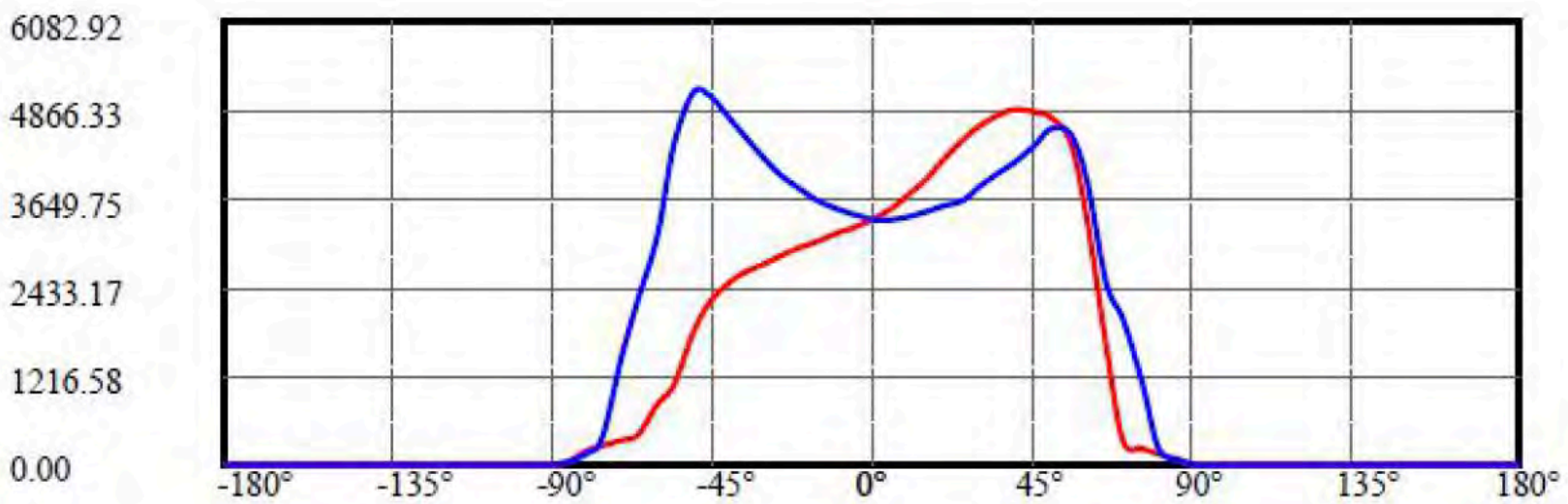
Zonal flux distribution table

| γ(°) | Average I(cd) | Zonal F(lm) | Sum F(lm) | Eff Flux(%) | Eff Sum(%) |
|---|---|---|---|---|---|
| 0.0 | 3345.064 | 0.000 | 0 | 0.00% | 0.00% |
| 5.0 | 3369.484 | 80.271 | 80.271 | 0.00% | 0.54% |
| 10.0 | 3435.217 | 243.426 | 323.696 | 0.00% | 2.17% |
| 15.0 | 3520.461 | 412.606 | 736.302 | 0.00% | 4.93% |
| 20.0 | 3624.388 | 588.836 | 1325.138 | 0.00% | 8.88% |
| 25.0 | 3744.090 | 772.817 | 2097.955 | 0.00% | 14.05% |
| 30.0 | 3862.962 | 962.679 | 3060.634 | 0.00% | 20.50% |
| 35.0 | 3983.079 | 1155.384 | 4216.018 | 0.00% | 28.24% |
| 40.0 | 4068.462 | 1343.339 | 5559.357 | 0.00% | 37.24% |
| 45.0 | 4118.834 | 1515.944 | 7075.301 | 0.00% | 47.40% |
| 50.0 | 4081.470 | 1656.991 | 8732.293 | 0.00% | 58.50% |
| 55.0 | 3790.905 | 1711.716 | 10444.009 | 0.00% | 69.96% |
| 60.0 | 3173.796 | 1609.871 | 12053.88 | 0.00% | 80.75% |
| 65.0 | 2172.117 | 1299.601 | 13353.481 | 0.00% | 89.46% |
| 70.0 | 1248.016 | 866.000 | 14219.481 | 0.00% | 95.26% |
| 75.0 | 414.363 | 434.519 | 14654 | 0.00% | 98.17% |
| 80.0 | 175.498 | 157.831 | 14811.831 | 0.00% | 99.23% |
| 85.0 | 71.545 | 67.128 | 14878.958 | 0.00% | 99.67% |
| 90.0 | 6.338 | 21.325 | 14900.283 | 0.00% | 99.82% |
| 95.0 | 2.200 | 2.338 | 14902.621 | 0.00% | 99.83% |
| 100.0 | 2.048 | 1.154 | 14903.775 | 0.00% | 99.84% |
| 105.0 | 2.297 | 1.163 | 14904.938 | 0.00% | 99.85% |
| 110.0 | 2.768 | 1.324 | 14906.262 | 0.00% | 99.86% |
| 115.0 | 3.515 | 1.591 | 14907.853 | 0.00% | 99.87% |
| 120.0 | 4.304 | 1.901 | 14909.754 | 0.00% | 99.88% |
| 125.0 | 4.982 | 2.146 | 14911.9 | 0.00% | 99.90% |
| 130.0 | 5.577 | 2.296 | 14914.196 | 0.00% | 99.91% |
| 135.0 | 5.951 | 2.329 | 14916.525 | 0.00% | 99.93% |
| 140.0 | 6.103 | 2.232 | 14918.757 | 0.00% | 99.94% |
| 145.0 | 6.172 | 2.048 | 14920.805 | 0.00% | 99.96% |
| 150.0 | 6.117 | 1.810 | 14922.614 | 0.00% | 99.97% |
| 155.0 | 6.144 | 1.552 | 14924.166 | 0.00% | 99.98% |
| 160.0 | 5.840 | 1.257 | 14925.423 | 0.00% | 99.99% |
| 165.0 | 5.508 | 0.935 | 14926.358 | 0.00% | 99.99% |
| 170.0 | 5.356 | 0.644 | 14927.002 | 0.00% | 100.00% |
| 175.0 | 5.356 | 0.383 | 14927.386 | 0.00% | 100.00% |
| 180.0 | 5.549 | 0.130 | 14927.516 | 0.00% | 100.00% |

**Luminous Intensity Distribution Diagram**

Light Distribution Curve [Unit:cd]




C0/C180:

C90/C270:

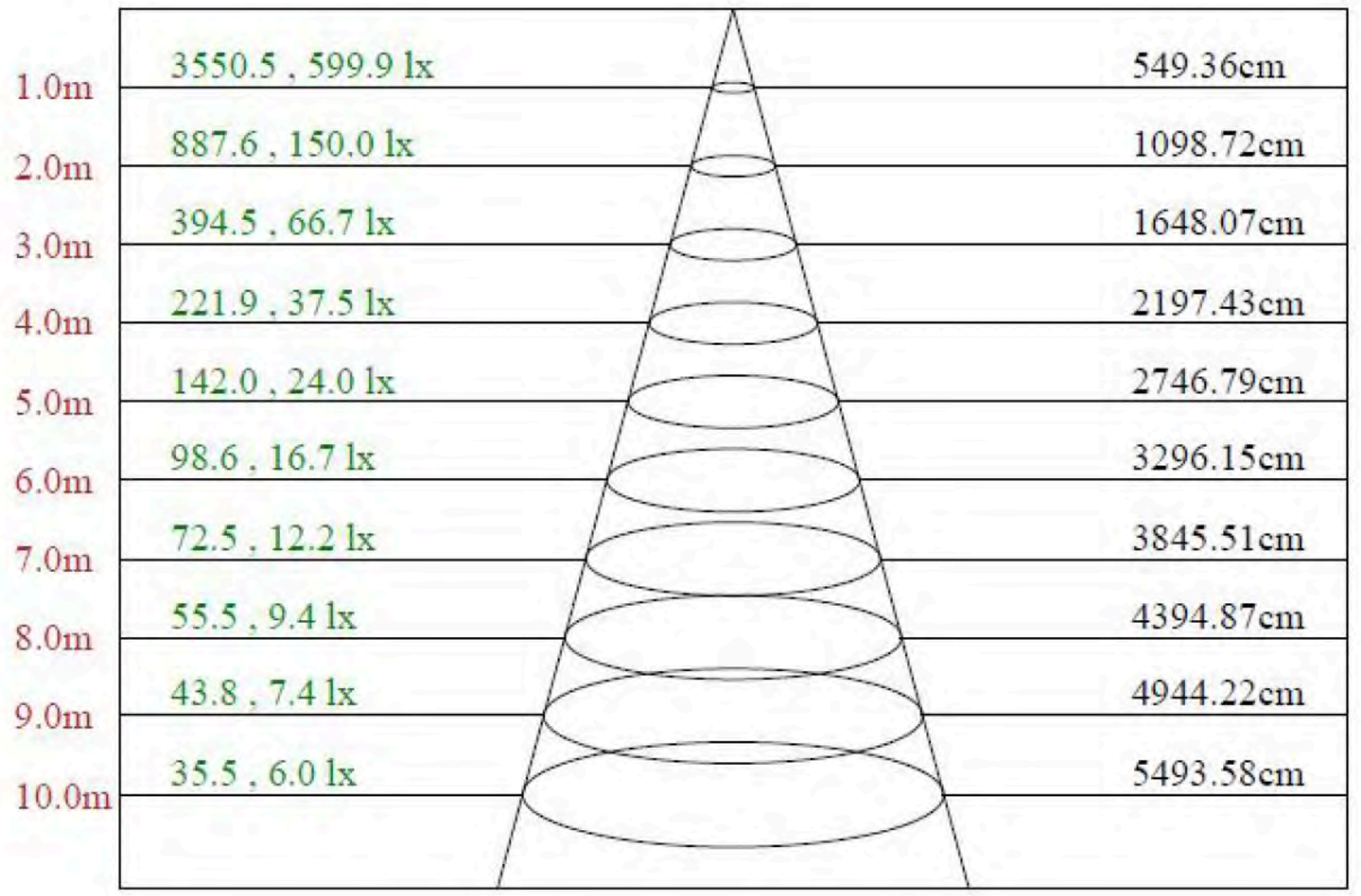
Field angle(10%Imax):C0/180Left:64.3 Right:69.4

:C90/270Left:74.4 Right:78.5

Beam Angle(50%Imax):C0/180Left:41.4 Right:62.7

:C90/270Left:63.4 Right:64.8

Lux distance Curve




Max , Ave Beam angle of C292.5 plane 139.99

## Luminous Intensity Distribution Data

| C/γ(°) | 0.0 | 5.0 | 10.0 | 15.0 | 20.0 | 25.0 | 30.0 | 35.0 | 40.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 3345.06 | 3496.80 | 3704.93 | 3926.34 | 4185.40 | 4471.02 | 4648.15 | 4800.93 | 4856.28 |
| 22.5 | 3345.06 | 3456.94 | 3640.72 | 3886.49 | 4154.40 | 4406.81 | 4612.73 | 4752.22 | 4867.35 |
| 45.0 | 3345.06 | 3428.16 | 3563.22 | 3771.35 | 4019.34 | 4285.03 | 4557.37 | 4820.86 | 5071.05 |
| 67.5 | 3345.06 | 3375.02 | 3474.66 | 3623.00 | 3817.85 | 4037.05 | 4280.61 | 4515.30 | 4827.50 |
| 90.0 | 3345.06 | 3377.23 | 3414.87 | 3479.09 | 3552.15 | 3645.15 | 3804.56 | 4001.62 | 4138.90 |
| 112.5 | 3345.06 | 3332.95 | 3321.88 | 3324.09 | 3359.52 | 3403.80 | 3448.09 | 3481.30 | 3505.65 |
| 135.0 | 3345.06 | 3284.24 | 3270.96 | 3217.82 | 3149.18 | 3100.47 | 3065.04 | 3016.33 | 2925.55 |
| 157.5 | 3345.06 | 3259.88 | 3197.89 | 3111.54 | 3020.76 | 2929.98 | 2830.34 | 2724.06 | 2546.93 |
| 180.0 | 3345.06 | 3255.46 | 3164.68 | 3076.11 | 2987.54 | 2881.27 | 2761.70 | 2657.64 | 2509.29 |
| 202.5 | 3345.06 | 3259.88 | 3206.75 | 3127.04 | 3045.11 | 2958.76 | 2881.27 | 2797.13 | 2648.78 |
| 225.0 | 3345.06 | 3266.53 | 3244.39 | 3228.89 | 3197.89 | 3175.75 | 3166.89 | 3149.18 | 3058.40 |
| 247.5 | 3345.06 | 3295.31 | 3315.24 | 3350.66 | 3406.02 | 3474.66 | 3558.79 | 3658.43 | 3740.35 |
| 270.0 | 3345.06 | 3421.52 | 3507.87 | 3642.93 | 3791.28 | 3975.05 | 4189.83 | 4510.88 | 4778.79 |
| 292.5 | 3345.06 | 3454.73 | 3583.15 | 3760.28 | 3981.70 | 4251.82 | 4552.94 | 4900.57 | 5296.90 |
| 315.0 | 3345.06 | 3470.23 | 3671.72 | 3862.13 | 4112.33 | 4426.74 | 4758.86 | 5075.48 | 5316.82 |
| 337.5 | 3345.06 | 3476.87 | 3680.57 | 3939.63 | 4209.75 | 4482.09 | 4690.22 | 4867.35 | 5006.84 |
| 360.0 | 3345.06 | 3496.80 | 3704.93 | 3926.34 | 4185.40 | 4471.02 | 4648.15 | 4800.93 | 4856.28 |

| C/γ(°) | 45.0 | 50.0 | 55.0 | 60.0 | 65.0 | 70.0 | 75.0 | 80.0 | 85.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 4831.93 | 4769.93 | 4402.60 | 3349.34 | 1616.33 | 328.36 | 218.98 | 143.03 | 69.52 |
| 22.5 | 4951.49 | 4969.20 | 4794.29 | 4109.45 | 2629.07 | 1137.63 | 276.33 | 141.93 | 56.90 |
| 45.0 | 5272.54 | 5398.75 | 5381.03 | 5068.84 | 3982.80 | 1743.20 | 327.69 | 263.04 | 91.00 |
| 67.5 | 5226.04 | 5640.09 | 5640.09 | 4395.08 | 2695.94 | 2193.77 | 312.42 | 106.94 | 38.75 |
| 90.0 | 4386.88 | 4599.44 | 4521.95 | 3886.49 | 2500.43 | 2008.89 | 1136.52 | 227.61 | 92.99 |
| 112.5 | 3481.30 | 3399.38 | 3200.10 | 2879.05 | 2197.10 | 1149.81 | 602.91 | 171.82 | 65.76 |
| 135.0 | 2728.49 | 2458.36 | 2053.18 | 1639.13 | 1209.59 | 712.29 | 297.36 | 146.58 | 50.70 |
| 157.5 | 2356.51 | 2015.54 | 1442.07 | 1003.01 | 635.90 | 329.24 | 252.63 | 184.00 | 66.20 |
| 180.0 | 2225.88 | 1811.83 | 1094.45 | 826.10 | 427.99 | 325.92 | 260.61 | 194.18 | 51.81 |
| 202.5 | 2409.65 | 2055.39 | 1517.35 | 1096.67 | 744.40 | 360.91 | 257.73 | 184.66 | 84.14 |
| 225.0 | 2901.19 | 2628.85 | 2210.38 | 1820.69 | 1375.65 | 789.12 | 340.54 | 154.10 | 71.96 |
| 247.5 | 3775.78 | 3758.07 | 3614.15 | 3239.96 | 2405.23 | 1307.01 | 769.19 | 202.15 | 113.14 |
| 270.0 | 5055.56 | 5088.77 | 4391.75 | 3134.12 | 2263.52 | 1465.32 | 386.81 | 139.05 | 52.03 |
| 292.5 | 5719.80 | 6082.92 | 6062.99 | 5121.98 | 3244.16 | 2735.58 | 560.40 | 142.37 | 65.54 |
| 315.0 | 5487.31 | 5562.59 | 5491.74 | 5126.41 | 4218.83 | 2256.43 | 354.71 | 261.49 | 104.29 |
| 337.5 | 5090.98 | 5064.41 | 4836.36 | 4084.43 | 2606.93 | 1124.79 | 275.00 | 145.03 | 69.97 |
| 360.0 | 4831.93 | 4769.93 | 4402.60 | 3349.34 | 1616.33 | 328.36 | 218.98 | 143.03 | 69.52 |

| C/γ(°) | 90.0 | 95.0 | 100.0 | 105.0 | 110.0 | 115.0 | 120.0 | 125.0 | 130.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 6.42 | 1.99 | 1.55 | 1.33 | 1.55 | 1.77 | 2.44 | 3.10 | 3.10 |
| 22.5 | 3.76 | 2.21 | 1.55 | 1.11 | 1.55 | 2.21 | 2.88 | 3.54 | 4.21 |
| 45.0 | 3.76 | 2.44 | 1.99 | 2.21 | 2.66 | 3.10 | 3.76 | 4.65 | 5.09 |
| 67.5 | 3.54 | 2.44 | 2.44 | 2.66 | 3.10 | 3.99 | 4.87 | 5.98 | 6.42 |
| 90.0 | 10.85 | 1.99 | 1.55 | 1.99 | 2.66 | 3.32 | 4.21 | 4.65 | 5.31 |
| 112.5 | 6.64 | 1.77 | 1.99 | 2.66 | 3.54 | 4.43 | 5.54 | 5.76 | 6.64 |
| 135.0 | 3.10 | 1.77 | 2.44 | 3.10 | 3.76 | 5.31 | 6.20 | 6.86 | 7.53 |
| 157.5 | 2.21 | 2.21 | 2.44 | 3.32 | 3.54 | 4.87 | 5.98 | 7.09 | 7.75 |
| 180.0 | 2.44 | 1.77 | 2.44 | 2.66 | 3.32 | 4.21 | 5.54 | 6.20 | 7.09 |
| 202.5 | 2.66 | 2.21 | 2.44 | 2.88 | 2.66 | 3.54 | 4.65 | 5.76 | 6.64 |
| 225.0 | 8.19 | 2.21 | 2.44 | 2.88 | 3.76 | 4.43 | 5.31 | 5.98 | 7.09 |
| 247.5 | 24.80 | 2.44 | 2.21 | 2.88 | 3.76 | 4.87 | 5.76 | 6.64 | 7.09 |
| 270.0 | 2.66 | 1.77 | 1.77 | 2.21 | 2.66 | 3.54 | 3.99 | 4.21 | 4.87 |
| 292.5 | 4.87 | 2.44 | 1.77 | 1.99 | 2.44 | 2.66 | 3.32 | 3.54 | 3.99 |
| 315.0 | 7.75 | 2.88 | 1.99 | 1.55 | 1.99 | 2.21 | 2.44 | 2.88 | 3.32 |
| 337.5 | 7.75 | 2.66 | 1.77 | 1.33 | 1.33 | 1.77 | 1.99 | 2.88 | 3.10 |
| 360.0 | 6.42 | 1.99 | 1.55 | 1.33 | 1.55 | 1.77 | 2.44 | 3.10 | 3.10 |

| C/γ(°) | 135.0 | 140.0 | 145.0 | 150.0 | 155.0 | 160.0 | 165.0 | 170.0 | 175.0 |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 3.76 | 4.43 | 4.87 | 4.87 | 5.31 | 5.09 | 5.09 | 5.31 | 5.54 |
| 22.5 | 4.65 | 4.87 | 5.09 | 5.54 | 5.54 | 5.54 | 5.31 | 5.31 | 5.76 |
| 45.0 | 5.31 | 5.76 | 5.76 | 5.98 | 5.98 | 5.76 | 5.54 | 5.54 | 5.76 |
| 67.5 | 6.86 | 6.64 | 6.20 | 6.42 | 6.20 | 5.98 | 5.54 | 5.54 | 5.98 |
| 90.0 | 5.31 | 5.54 | 5.76 | 5.76 | 5.76 | 5.54 | 5.09 | 4.87 | 4.87 |
| 112.5 | 7.31 | 7.09 | 7.09 | 6.42 | 6.42 | 5.98 | 5.54 | 5.31 | 5.09 |
| 135.0 | 7.97 | 7.75 | 7.31 | 7.09 | 7.09 | 6.20 | 5.76 | 5.31 | 5.09 |
| 157.5 | 7.97 | 7.97 | 7.75 | 7.53 | 7.31 | 6.64 | 5.98 | 5.76 | 5.31 |
| 180.0 | 7.53 | 7.53 | 7.53 | 7.31 | 7.31 | 6.86 | 5.76 | 5.76 | 5.31 |
| 202.5 | 7.09 | 7.53 | 7.53 | 7.31 | 7.31 | 6.86 | 6.42 | 5.76 | 5.54 |
| 225.0 | 7.31 | 7.31 | 7.53 | 7.31 | 7.09 | 6.64 | 6.20 | 5.76 | 5.76 |
| 247.5 | 7.31 | 7.53 | 7.31 | 7.09 | 6.86 | 6.42 | 6.20 | 5.76 | 5.31 |
| 270.0 | 5.09 | 5.31 | 5.54 | 5.09 | 4.87 | 4.87 | 4.65 | 4.65 | 4.65 |
| 292.5 | 4.43 | 4.43 | 4.87 | 4.87 | 5.09 | 5.09 | 4.87 | 4.87 | 5.09 |
| 315.0 | 3.76 | 4.21 | 4.43 | 4.65 | 5.09 | 4.87 | 4.87 | 5.09 | 5.31 |
| 337.5 | 3.54 | 3.76 | 4.21 | 4.65 | 5.09 | 5.09 | 5.31 | 5.09 | 5.31 |
| 360.0 | 3.76 | 4.43 | 4.87 | 4.87 | 5.31 | 5.09 | 5.09 | 5.31 | 5.54 |

| C/γ(°) | 180.0 |
|---|---|
| 0.0 | 5.55 |
| 22.5 | 5.55 |
| 45.0 | 5.55 |
| 67.5 | 5.55 |
| 90.0 | 5.55 |
| 112.5 | 5.55 |
| 135.0 | 5.55 |
| 157.5 | 5.55 |
| 180.0 | 5.55 |
| 202.5 | 5.55 |
| 225.0 | 5.55 |
| 247.5 | 5.55 |
| 270.0 | 5.55 |
| 292.5 | 5.55 |
| 315.0 | 5.55 |
| 337.5 | 5.55 |
| 360.0 | 5.55 |

# 4 Additional Test

## Electrical data at 480V

| Model Number | Test Voltage (V) | Frequency(Hz) | Power Factor | THD |
|---|---|---|---|---|
| STL3P-100W-3000K-B-MB-HC-P | 480 | 60 | 0.960 | 5.3% |
| STL3P-100W-5700K-B-MB-HC-P | 480 | 60 | 0.969 | 3.9% |

# 5 Performance Assessment

| Model name | CCT(K) | Total Luminous(lm) | Power(W) | Luminous Efficacy(lm/W) |
|---|---|---|---|---|
| STL3P-100W-3000K-B-MB-HC-P | 3000K | 15083.79 | 101.57 | 148.5 |
| STL3P-100W-3500K-B-MB-HC-P | 3500K | 15162.48 *1 | 101.46 *2 | 149.4 *3 |
| STL3P-100W-4000K-B-MB-HC-P | 4000K | 15241.17 *1 | 101.46 *2 | 150.2 *3 |
| STL3P-100W-4500K-B-MB-HC-P | 4500K | 15319.85 *1 | 101.46 *2 | 151.0 *3 |
| STL3P-100W-5000K-B-MB-HC-P | 5000K | 15398.54 *1 | 101.46 *2 | 151.8 *3 |
| STL3P-100W-5700K-B-MB-HC-P | 5700K | 15477.23 | 101.35 | 152.7 |

*1: This value is calculated and the calculation formula is as below:

15162.48=(15477.23-15083.79) /5+15083.79

15241.17=(15477.23-15083.79) /5+15162.48

15319.85=(15477.23-15083.79) /5+15241.17

15398.54=(15477.23-15083.79) /5+15319.85

*2: This value is calculated and the calculation formula is as below:

101.46=(101.57+101.35)/2

*3: This value is calculated and the calcuation formula is as below:

149.4=15162.48 /101.46

150.2=15241.17 /101.46

151.0=15319.85 /101.46

151.8=15398.54 /101.46

# Photo Document

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