

## Lightsource Test Report

### Product Information

Product Category: LED-PL-Röhre  
 Product Spec: LED-PL-2G11-I-15-CWM-360  
 Manufacturer: METOLIGHT  
 Buyer: 4493

Product Type: LED-PL-Röhre-2G11  
 Product Number: 1  
 Submitted Unit: 104619

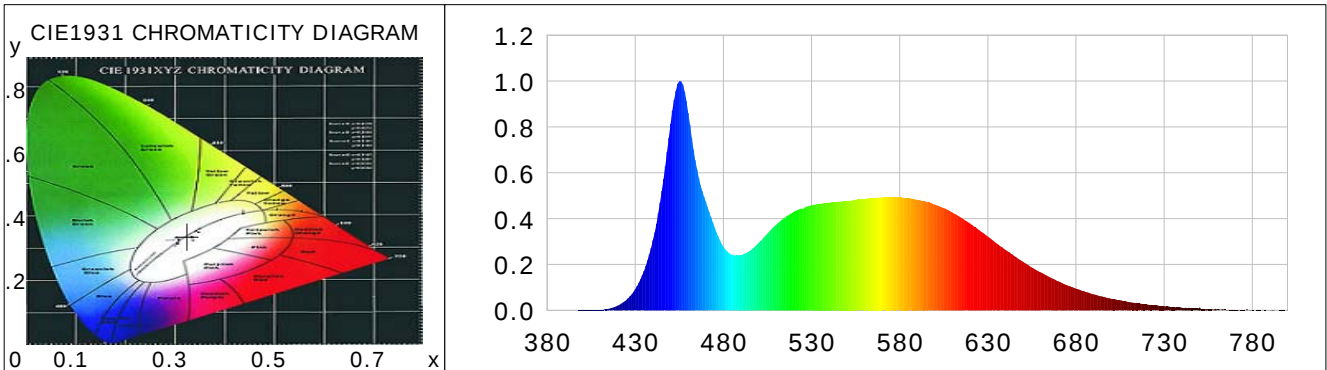
### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3244$   $y=0.3370$   $u(u')=0.0209$   $v=0.3162$   $v'=0.4742$   
 CCT:  $T_c=5872K$  ( $duv=0.00157$ ) Color Ratio:  $R=0.145$   $G=0.799$   $B=0.055$   
 Peak Wavelength: 455.4nm Half Bandwidth: 24.2nm  
 Dominant Wavelength: 497.0nm Color Purity: 0.028  
 CRI:  $R_a=84.4$ ,  $avgR(1\sim14)=77.7$ ,  $avgR(1\sim15)=77.8$  TM30:  $R_f=83$ ,  $R_g=94$   
 GAI:  $GAI\_BB\_8=91.5$ ,  $GAI\_BB\_15=97.3$ ,  $GAI\_EES=86.3$   

|        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|
| R1 =84 | R2 =91 | R3 =93 | R4 =82 | R5 =83 | R6 =85 | R7 =87 | R8 =70 |
| R9 =15 | R10=76 | R11=81 | R12=58 | R13=86 | R14=97 | R15=80 |        |

Color Quality Scale:  $Q_a=81.1$ ,  $Q_f=81.2$ ,  $Q_p=81.1$ ,  $Q_g=91.5$   

|        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|
| Q1 =83 | Q2 =98 | Q3 =78 | Q4 =70 | Q5 =76 | Q6 =79 | Q7 =85 | Q8 =90 |
| Q9 =97 | Q10=88 | Q11=83 | Q12=82 | Q13=82 | Q14=73 | Q15=77 |        |



### Photometric Parameters

|                                   |                                           |                          |
|-----------------------------------|-------------------------------------------|--------------------------|
| Luminous Flux: 1581.9 lm          | Efficiency: 112.03 lm/W                   | Radiant Power: 5.044 W   |
| Total mains efficacy: 131.75 lm/W | Energy Efficiency Class: E (EU 2019/2015) |                          |
| Pupil Flux: 2890.67 Plm           | Pupil Lumens Per Watt: 204.72 Plm/W       | Pupil Factor (Kp): 1.827 |
| Cirtpic Flux: 6595.41 lm          |                                           |                          |

### Electric Parameters

|                      |                    |               |
|----------------------|--------------------|---------------|
| Voltage: 230.20V     | Current: 0.0620A   | Power: 14.12W |
| Power Factor: 0.9420 | Frequency: 49.99Hz |               |

### Test Information

|                                       |                                                    |
|---------------------------------------|----------------------------------------------------|
| Scan Range: 380~800:1nm               | Photometric Method: sphere-spectroradiometer       |
| Stabilization Time: 0 ms ALC.: 1.0000 | Photometric Condition: Sphere diameter: 2.00m, 4PI |
| Max of Signal: 46161 (2351)           | CCD Integration Time: 99.50 ms                     |

Condition: Tx:0.0°C, Ti:0.0°C, R.H.:60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-02-26 12:17:11  
 Inspector:

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| WL(nm) | PL     | PE(mW/nm) | WL(nm) | PL     | PE(mW/nm) | WL(nm) | PL     | PE(mW/nm) |
|--------|--------|-----------|--------|--------|-----------|--------|--------|-----------|
| 380    | 0.0005 | 0.0268    | 525    | 0.4432 | 21.8566   | 670    | 0.1266 | 6.2435    |
| 385    | 0.0003 | 0.0132    | 530    | 0.4587 | 22.6219   | 675    | 0.1089 | 5.3713    |
| 390    | 0.0004 | 0.0201    | 535    | 0.4651 | 22.9382   | 680    | 0.0954 | 4.7029    |
| 395    | 0.0004 | 0.0192    | 540    | 0.4695 | 23.1555   | 685    | 0.0820 | 4.0417    |
| 400    | 0.0010 | 0.0486    | 545    | 0.4736 | 23.3587   | 690    | 0.0702 | 3.4606    |
| 405    | 0.0016 | 0.0776    | 550    | 0.4771 | 23.5286   | 695    | 0.0605 | 2.9823    |
| 410    | 0.0028 | 0.1403    | 555    | 0.4830 | 23.8202   | 700    | 0.0504 | 2.4853    |
| 415    | 0.0071 | 0.3526    | 560    | 0.4860 | 23.9713   | 705    | 0.0442 | 2.1800    |
| 420    | 0.0204 | 1.0048    | 565    | 0.4908 | 24.2051   | 710    | 0.0367 | 1.8088    |
| 425    | 0.0460 | 2.2687    | 570    | 0.4925 | 24.2919   | 715    | 0.0311 | 1.5322    |
| 430    | 0.0927 | 4.5719    | 575    | 0.4948 | 24.4019   | 720    | 0.0263 | 1.2976    |
| 435    | 0.1722 | 8.4921    | 580    | 0.4935 | 24.3404   | 725    | 0.0220 | 1.0841    |
| 440    | 0.3052 | 15.0527   | 585    | 0.4887 | 24.1029   | 730    | 0.0183 | 0.9020    |
| 445    | 0.5209 | 25.6906   | 590    | 0.4828 | 23.8120   | 735    | 0.0140 | 0.6926    |
| 450    | 0.8137 | 40.1308   | 595    | 0.4734 | 23.3465   | 740    | 0.0114 | 0.5629    |
| 455    | 1.0000 | 49.3189   | 600    | 0.4612 | 22.7468   | 745    | 0.0102 | 0.5009    |
| 460    | 0.8611 | 42.4673   | 605    | 0.4467 | 22.0328   | 750    | 0.0121 | 0.5986    |
| 465    | 0.6152 | 30.3433   | 610    | 0.4264 | 21.0314   | 755    | 0.0059 | 0.2911    |
| 470    | 0.4736 | 23.3560   | 615    | 0.4036 | 19.9049   | 760    | 0.0037 | 0.1800    |
| 475    | 0.3617 | 17.8402   | 620    | 0.3784 | 18.6614   | 765    | 0.0038 | 0.1884    |
| 480    | 0.2774 | 13.6790   | 625    | 0.3500 | 17.2618   | 770    | 0.0016 | 0.0786    |
| 485    | 0.2428 | 11.9734   | 630    | 0.3212 | 15.8435   | 775    | 0.0016 | 0.0796    |
| 490    | 0.2407 | 11.8721   | 635    | 0.2915 | 14.3776   | 780    | 0.0011 | 0.0541    |
| 495    | 0.2603 | 12.8380   | 640    | 0.2633 | 12.9836   | 785    | 0.0009 | 0.0446    |
| 500    | 0.2950 | 14.5481   | 645    | 0.2370 | 11.6893   | 790    | 0.0002 | 0.0105    |
| 505    | 0.3356 | 16.5498   | 650    | 0.2115 | 10.4322   | 795    | 0.0013 | 0.0639    |
| 510    | 0.3747 | 18.4795   | 655    | 0.1870 | 9.2214    | 800    | 0.0024 | 0.1204    |
| 515    | 0.4052 | 19.9851   | 660    | 0.1661 | 8.1916    |        |        |           |
| 520    | 0.4302 | 21.2161   | 665    | 0.1448 | 7.1419    |        |        |           |

Condition: Tx:0.0°C, Ti:0.0°C, R.H.:60%  
 Test Lab:  
 Operator: CRE

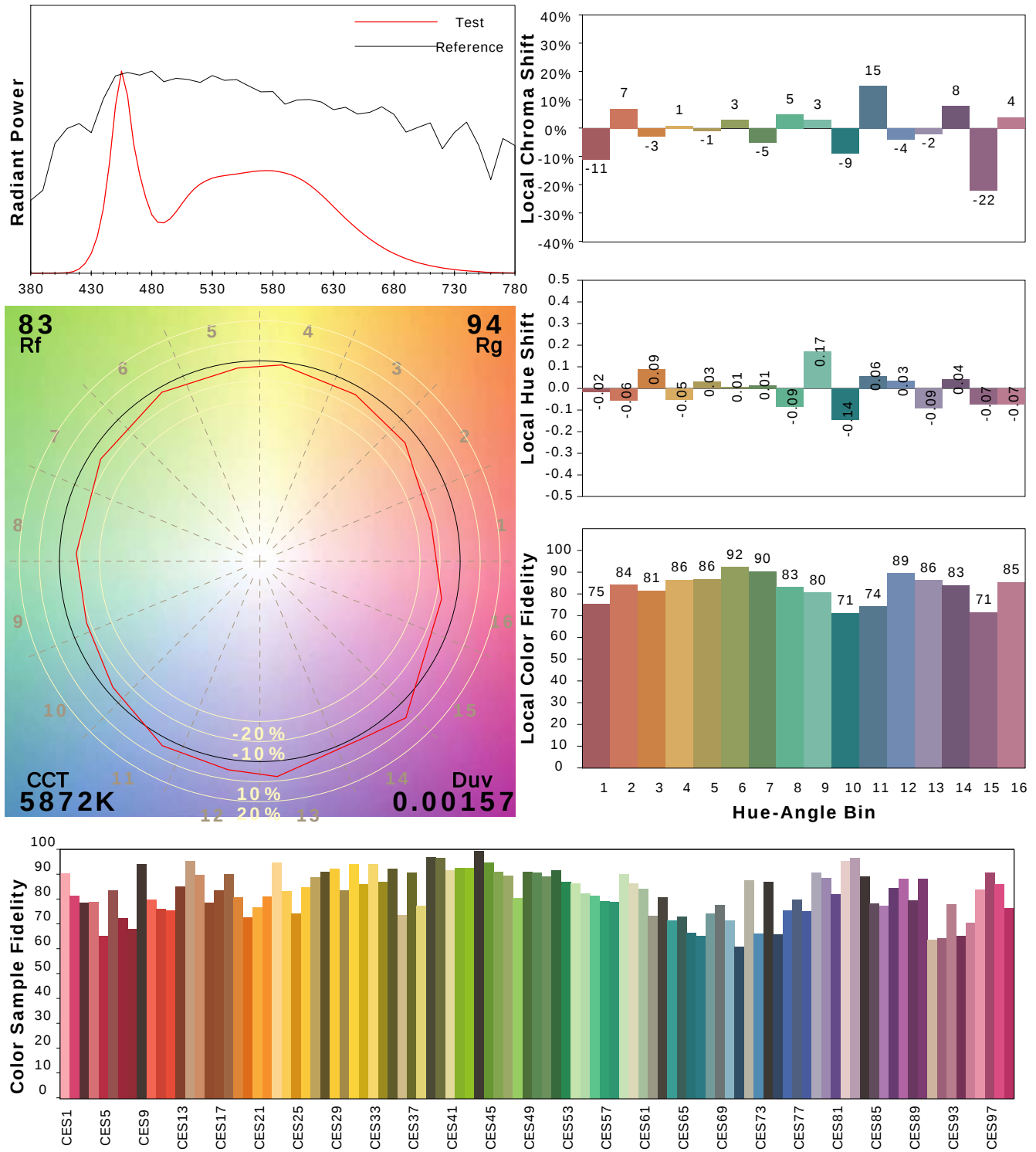
Test Device: Lisun LMS-9000B  
 Test Time: 2021-02-26 12:17:11  
 Inspector:

## IES TM-30-18 Color Rendition Report

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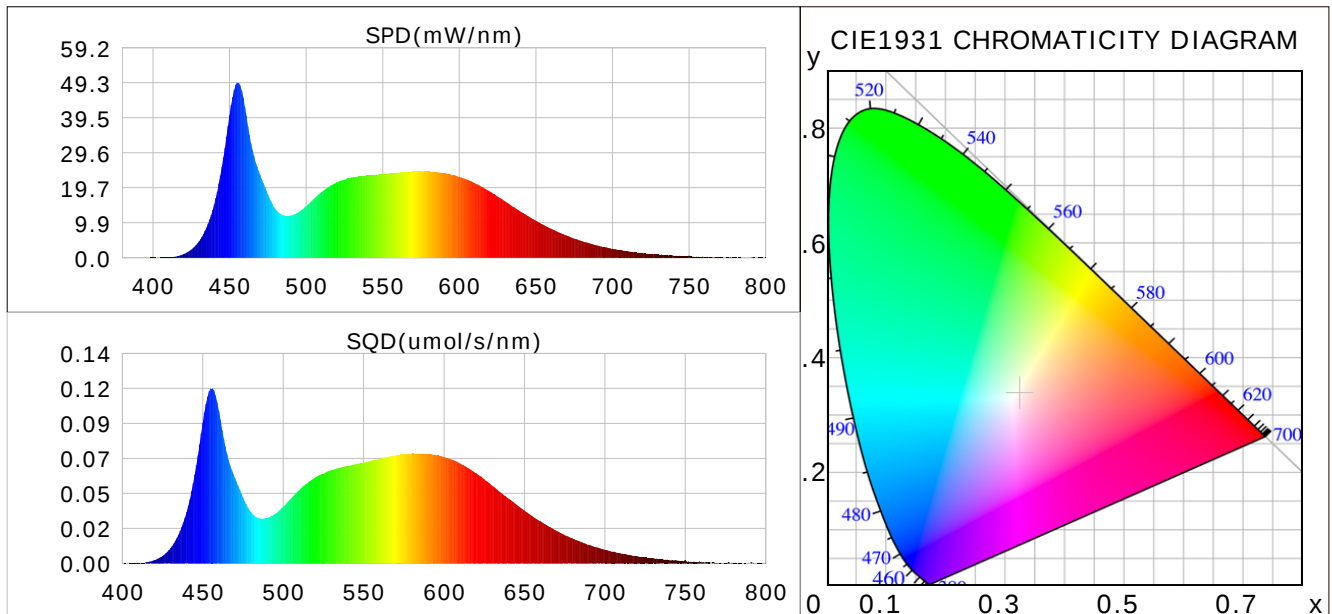
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 Operator: CRE

Test Device: Lisun LMS-9000B  
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 Inspector:

## Plant optical param data

### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3244$   $y=0.3370$   $u(u')=0.2029$   $v=0.3162$   $v'=0.4742$   
 CCT:  $T_c=5872K$  ( $duv=0.00157$ ) Color Ratio:  $R=0.145$   $G=0.799$   $B=0.055$   
 Peak Wavelength: 455.4nm Half Bandwidth: 24.2nm  
 Dominant Wavelength: 497.0nm Color Purity: 0.028  
 CRI: Ra= 84.4



### Plant Optical Param

|                                            |                                        |
|--------------------------------------------|----------------------------------------|
| $\mu_v(\text{lm})$ : 1581.90               | $Q_v(\text{lm.s})$ : 1581.90           |
| $\mu_e, \bar{E}(\text{W/nm})$ : 5.04       | $Q_e(\text{J})$ : 5.04                 |
| $\mu_e(\text{W})$ : 4.98                   | $\mu_{fr}(\text{W})$ : 0.07            |
| $\zeta_e$ : 0.35                           | $\zeta_{fr}$ : 0.00                    |
| $PPE(\mu\text{mol/s/w})$ : 1.60            | $K_{fr}$ : 0.03                        |
| $E_{rb\_Ratio}$ : 0.71                     | $PPF(\mu\text{mol/s})$ : 22.56         |
| $PF_{uv}(360-400)(\mu\text{mol/s})$ : 0.00 | $PPF(400-500)(\mu\text{mol/s})$ : 6.17 |
| $PPF(500-600)(\mu\text{mol/s})$ : 10.39    | $PPF(600-700)(\mu\text{mol/s})$ : 6.00 |
| $PF_{fr}(700-800)(\mu\text{mol/s})$ : 0.40 | $PPF.t(\mu\text{mol})$ : 22.56         |
| $\mu_{ch-A.t}(\text{J})$ : 0.40            | $\mu_{ch-A}(W)$ : 0.40                 |
| $\mu_{ch-B.t}(\text{J})$ : 0.29            | $\mu_{ch-B}(W)$ : 0.29                 |
| $\mu_b.t(\text{J})$ : 1.60                 | $\mu_b(W)$ : 1.60                      |
| $\mu_y.t(\text{J})$ : 2.26                 | $\mu_y(W)$ : 2.26                      |
| $\mu_r.t(\text{J})$ : 1.15                 | $\mu_r(W)$ : 1.15                      |

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|                      |                    |               |
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