

## Lightsource Test Report

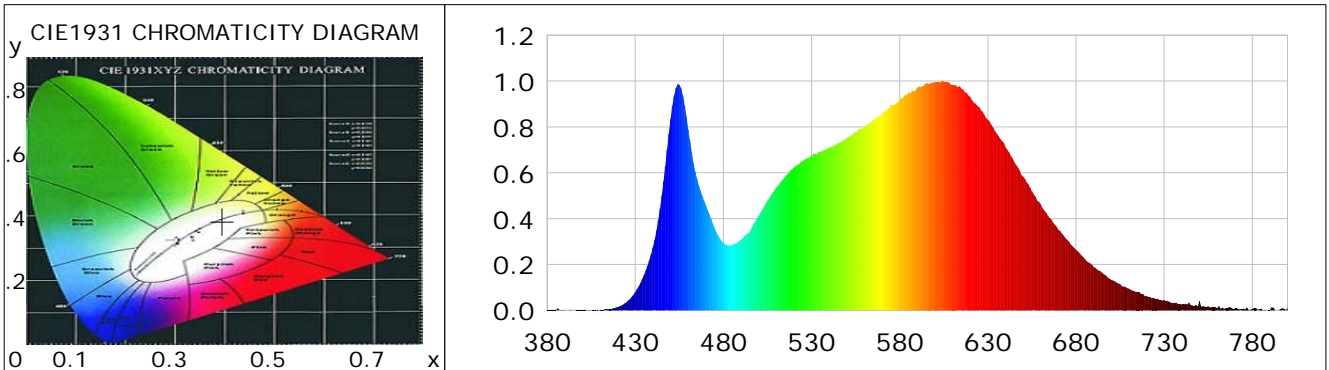
### Product Information

Product Category: LED-PL-Röhre  
 Product Spec: LED-PL-2G11-26W-NWM  
 Manufacturer: METOLIGHT  
 Buyer: 7709

Product Type: LED-PL-Röhren-2G11  
 Product Number: 1  
 Submitted Unit: 104981

### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3955$   $y=0.3841$   $u(u')=0.2320$   $v=0.3380$   $v'=0.5070$   
 CCT:  $T_c=3673K$  ( $duv=-0.00066$ ) Color Ratio:  $R=0.201$   $G=0.764$   $B=0.035$   
 Peak Wavelength: 604.3nm Half Bandwidth: 149.8nm  
 Dominant Wavelength: 580.6nm Color Purity: 0.340  
 CRI:  $R_a = 86.0$ ,  $avgR(1\sim14) = 80.5$ ,  $avgR(1\sim15) = 80.4$  TM30:  $R_f = 85$ ,  $R_g = 96$   
 GAI:  $GAI\_BB\_8=94.7$ ,  $GAI\_BB\_15=102.3$ ,  $GAI\_EES=69.2$   
 R1 =85 R2 =92 R3 =96 R4 =84 R5 =85 R6 =89 R7 =86 R8 =69  
 R9 =24 R10=81 R11=84 R12=65 R13=87 R14=98 R15=80  
 Color Quality Scale:  $Q_a = 85.1$ ,  $Q_f = 85.2$ ,  $Q_p = 85.1$ ,  $Q_g = 93.9$   
 Q1 =84 Q2 =98 Q3 =82 Q4 =78 Q5 =83 Q6 =85 Q7 =88 Q8 =90  
 Q9 =98 Q10=91 Q11=88 Q12=87 Q13=87 Q14=78 Q15=80



### Photometric Parameters

Luminous Flux: 2824.6 lm Efficiency: 109.48 lm/W Radiant Power: 8.629 W  
 Total mains efficacy: 128.75 lm/W Energy Efficiency Class: E (EU 2019/2015)  
 Pupil Flux: 4121.15 Plm Pupil Lumens Per Watt: 159.73 Plm/W Pupil Factor (Kp): 1.459  
 Circopic Flux: 8249.94 lm

### Electric Parameters

Voltage: 230.80V Current: 0.1120A Power: 25.80W  
 Power Factor: 0.9550 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: 46172 (2683) CCD Integration Time: 457.80 ms

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

Test Device: Lisun LMS-9000B  
 Test Time: 2021-03-05 11:45:23  
 Inspector:

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WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0012	0.0628	525	0.6513	33.0166	670	0.3523	17.8605
385	0.0016	0.0831	530	0.6726	34.0954	675	0.3084	15.6328
390	0.0012	0.0595	535	0.6921	35.0846	680	0.2640	13.3827
395	0.0004	0.0187	540	0.7095	35.9654	685	0.2236	11.3343
400	0.0011	0.0536	545	0.7295	36.9834	690	0.1885	9.5559
405	0.0003	0.0164	550	0.7507	38.0557	695	0.1614	8.1815
410	0.0029	0.1488	555	0.7767	39.3718	700	0.1332	6.7536
415	0.0061	0.3086	560	0.8024	40.6778	705	0.1140	5.7766
420	0.0149	0.7554	565	0.8289	42.0215	710	0.0948	4.8065
425	0.0350	1.7746	570	0.8559	43.3902	715	0.0798	4.0461
430	0.0790	4.0069	575	0.8953	45.3841	720	0.0615	3.1170
435	0.1537	7.7903	580	0.9212	46.6970	725	0.0512	2.5932
440	0.2744	13.9088	585	0.9489	48.1030	730	0.0449	2.2764
445	0.5012	25.4101	590	0.9723	49.2880	735	0.0318	1.6127
450	0.8333	42.2449	595	0.9917	50.2721	740	0.0257	1.3014
455	0.9843	49.8955	600	0.9949	50.4331	745	0.0234	1.1850
460	0.7894	40.0154	605	0.9984	50.6150	750	0.0410	2.0805
465	0.5738	29.0877	610	0.9822	49.7922	755	0.0176	0.8913
470	0.4593	23.2826	615	0.9682	49.0827	760	0.0093	0.4727
475	0.3586	18.1775	620	0.9301	47.1525	765	0.0097	0.4915
480	0.2938	14.8932	625	0.8860	44.9147	770	0.0080	0.4052
485	0.2851	14.4524	630	0.8310	42.1247	775	0.0076	0.3853
490	0.3072	15.5727	635	0.7711	39.0882	780	0.0064	0.3268
495	0.3414	17.3091	640	0.7112	36.0518	785	0.0080	0.4068
500	0.4118	20.8772	645	0.6459	32.7412	790	0.0026	0.1305
505	0.4789	24.2747	650	0.5829	29.5516	795	0.0025	0.1251
510	0.5365	27.1956	655	0.5190	26.3109	800	0.0123	0.6236
515	0.5822	29.5139	660	0.4622	23.4299			
520	0.6231	31.5887	665	0.4032	20.4392			

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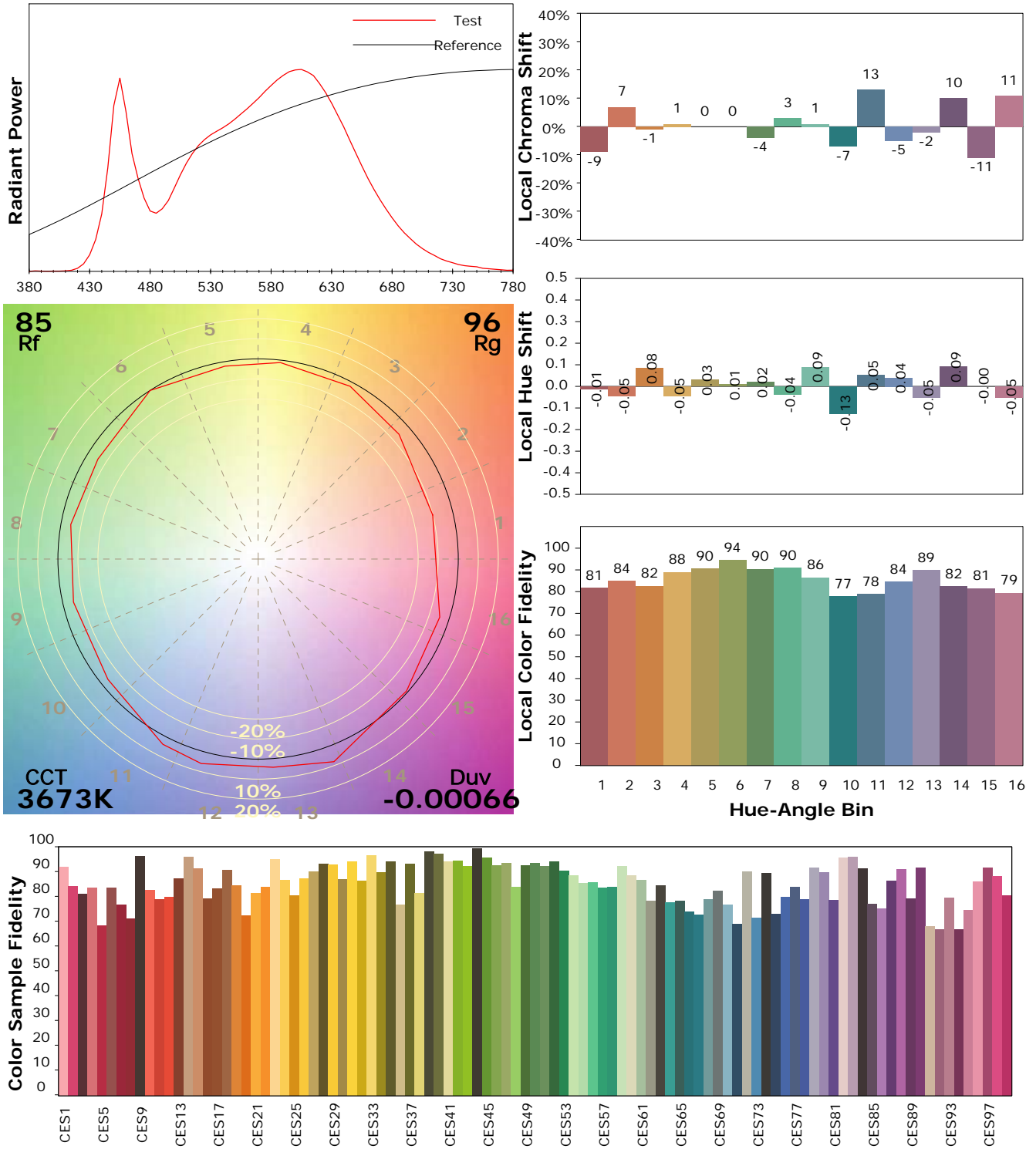
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## I ES TM-30-18 Color Rendition Report

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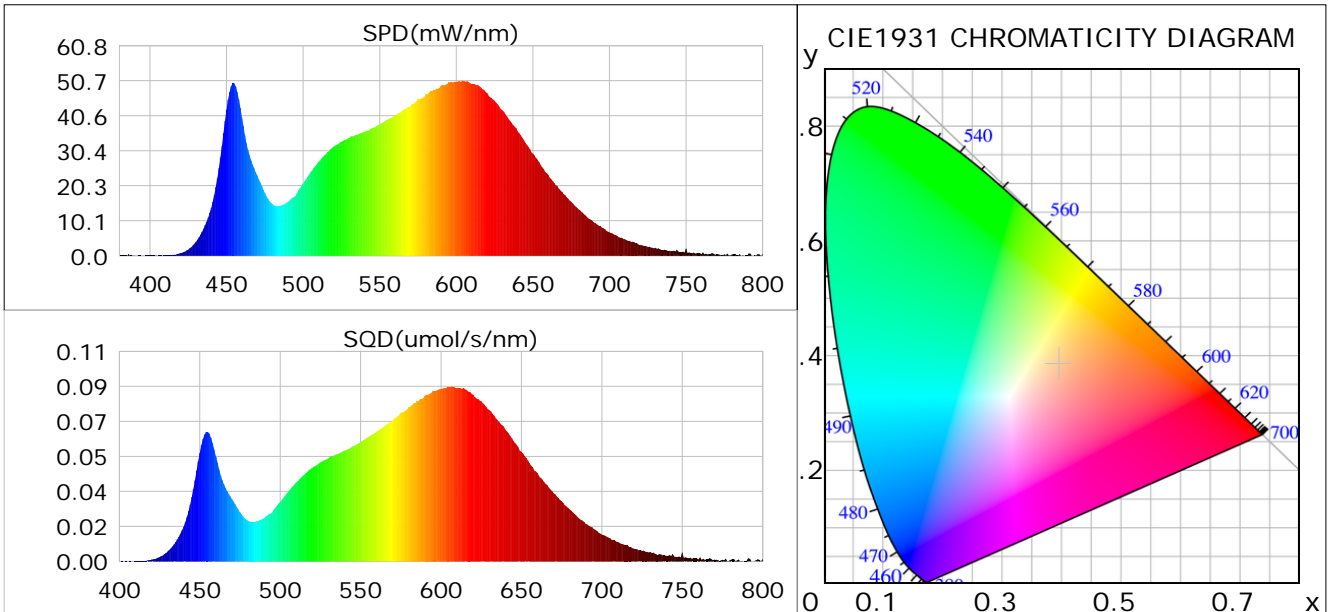
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## Plant optical param data

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 Peak Wavelength: 604.3nm Half Bandwidth: 149.8nm  
 Dominant Wavelength: 580.6nm Color Purity: 0.340  
 CRI:  $R_a=86.0$



### Plant Optical Param

$ \mu_v(lm): 2824.60$	$Q_v(lm.s): 2824.60$
$ \mu_e, \dot{E}(W/nm): 8.63$	$Q_e(J): 8.63$
$ \mu_e(W): 8.46$	$ \mu_{fr}(W): 0.18$
$ \zeta_e: 0.33$	$ \zeta_{fr}: 0.01$
$PPE(umol/s/w): 1.55$	$K_{fr}: 0.04$
$Erb\_Ratio: 1.78$	$PPF(umol/s): 40.02$
$PF_{uv}(360-400)(umol/s): 0.01$	$PPF(400-500)(umol/s): 6.42$
$PPF(500-600)(umol/s): 17.87$	$PPF(600-700)(umol/s): 15.73$
$PPF_{fr}(700-800)(umol/s): 1.04$	$PPF.t(umol): 40.02$
$ \mu_{ch-A.t}(J): 0.66$	$ \mu_{ch-A}(W): 0.66$
$ \mu_{ch-B.t}(J): 0.39$	$ \mu_{ch-B}(W): 0.39$
$ \mu_b.t(J): 1.66$	$ \mu_b(W): 1.66$
$ \mu_y.t(J): 3.86$	$ \mu_y(W): 3.86$
$ \mu_r.t(J): 3.01$	$ \mu_r(W): 3.01$

### Electric Parameters

Voltage: 230.80V	Current: 0.1120A	Power: 25.80W
Power Factor: 0.9550	Frequency: 49.99Hz	

Condition:  $T_x:0.0^\circ C$ ,  $T_i:0.0^\circ C$ , R.H.: 60%  
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