

## Lightsource Test Report

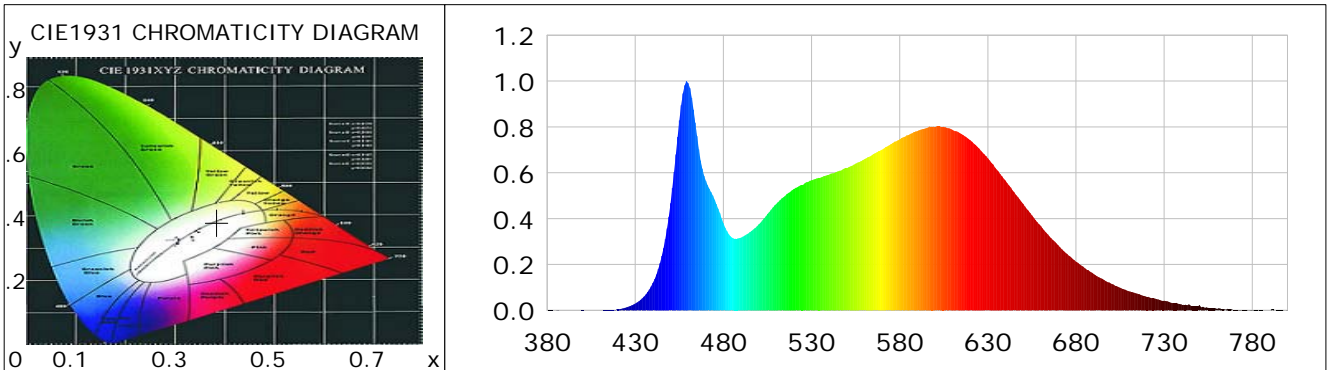
### Product Information

Product Category: LED-PL-Röhre  
 Product Spec: LED-PL-2G11-I-18-NWM-360  
 Manufacturer: METOLIGHT  
 Buyer: 4493

Product Type: LED-PL-Röhre-2G11  
 Product Number: 1  
 Submitted Unit: 101257

### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3842$   $y=0.3806$   $u(u')=0.2260$   $v=0.3359$   $v'=0.5038$   
 CCT:  $T_c=3928K$  ( $duv=0.00072$ ) Color Ratio:  $R=0.194$   $G=0.762$   $B=0.044$   
 Peak Wavelength: 459.2nm Half Bandwidth: 23.6nm  
 Dominant Wavelength: 579.0nm Color Purity: 0.295  
 CRI:  $R_a=86.9$ ,  $avgR(1\sim14)=82.1$ ,  $avgR(1\sim15)=82.1$  TM30:  $R_f=83$ ,  $R_g=92$   
 GAI:  $GAI\_BB\_8=90.0$ ,  $GAI\_BB\_15=98.6$ ,  $GAI\_EES=69.9$   
 R1 =88 R2 =96 R3 =95 R4 =82 R5 =86 R6 =93 R7 =84 R8 =70  
 R9 =30 R10=90 R11=82 R12=64 R13=91 R14=98 R15=82  
 Color Quality Scale:  $Q_a=85.6$ ,  $Q_f=85.9$ ,  $Q_p=84.0$ ,  $Q_g=91.3$   
 Q1 =80 Q2 =94 Q3 =87 Q4 =79 Q5 =80 Q6 =81 Q7 =87 Q8 =91  
 Q9 =97 Q10=96 Q11=92 Q12=90 Q13=89 Q14=80 Q15=81



### Photometric Parameters

Luminous Flux: 1814.5 lm Efficiency: 105.01 lm/W Radiant Power: 5.622 W  
 Total mains efficacy: 123.49 lm/W Energy Efficiency Class: E (EU 2019/2015)  
 Pupil Flux: 2831.64 Plm Pupil Lumens Per Watt: 163.87 Plm/W Pupil Factor (Kp): 1.561  
 Circopic Flux: 5965.07 lm

### Electric Parameters

Voltage: 230.70V Current: 0.0810A Power: 17.28W  
 Power Factor: 0.9160 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: 46925 (2281) CCD Integration Time: 162.44 ms

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WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0003	0.0131	525	0.5472	21.4900	670	0.2835	11.1352
385	0.0007	0.0294	530	0.5669	22.2644	675	0.2461	9.6666
390	0.0004	0.0171	535	0.5786	22.7251	680	0.2127	8.3547
395	0.0004	0.0176	540	0.5924	23.2653	685	0.1838	7.2173
400	0.0010	0.0379	545	0.6061	23.8024	690	0.1588	6.2385
405	0.0001	0.0031	550	0.6200	24.3504	695	0.1371	5.3827
410	0.0006	0.0221	555	0.6395	25.1174	700	0.1161	4.5579
415	0.0019	0.0732	560	0.6593	25.8916	705	0.0990	3.8866
420	0.0049	0.1931	565	0.6816	26.7697	710	0.0837	3.2860
425	0.0129	0.5072	570	0.7013	27.5434	715	0.0720	2.8291
430	0.0293	1.1526	575	0.7249	28.4690	720	0.0592	2.3267
435	0.0601	2.3588	580	0.7457	29.2854	725	0.0510	2.0032
440	0.1195	4.6926	585	0.7650	30.0443	730	0.0420	1.6513
445	0.2378	9.3381	590	0.7819	30.7061	735	0.0320	1.2563
450	0.4674	18.3566	595	0.7946	31.2076	740	0.0257	1.0107
455	0.8288	32.5503	600	0.7999	31.4168	745	0.0203	0.7963
460	0.9911	38.9241	605	0.8006	31.4442	750	0.0228	0.8960
465	0.7606	29.8699	610	0.7873	30.9181	755	0.0109	0.4268
470	0.5651	22.1925	615	0.7696	30.2248	760	0.0068	0.2658
475	0.4830	18.9680	620	0.7424	29.1560	765	0.0036	0.1397
480	0.3800	14.9257	625	0.7062	27.7344	770	0.0023	0.0901
485	0.3165	12.4304	630	0.6630	26.0370	775	0.0028	0.1119
490	0.3174	12.4640	635	0.6138	24.1073	780	0.0041	0.1619
495	0.3410	13.3906	640	0.5657	22.2163	785	0.0020	0.0785
500	0.3749	14.7240	645	0.5148	20.2175	790	0.0007	0.0265
505	0.4208	16.5264	650	0.4644	18.2398	795	0.0021	0.0817
510	0.4647	18.2486	655	0.4144	16.2734	800	0.0030	0.1191
515	0.4996	19.6216	660	0.3689	14.4865			
520	0.5297	20.8013	665	0.3224	12.6632			

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

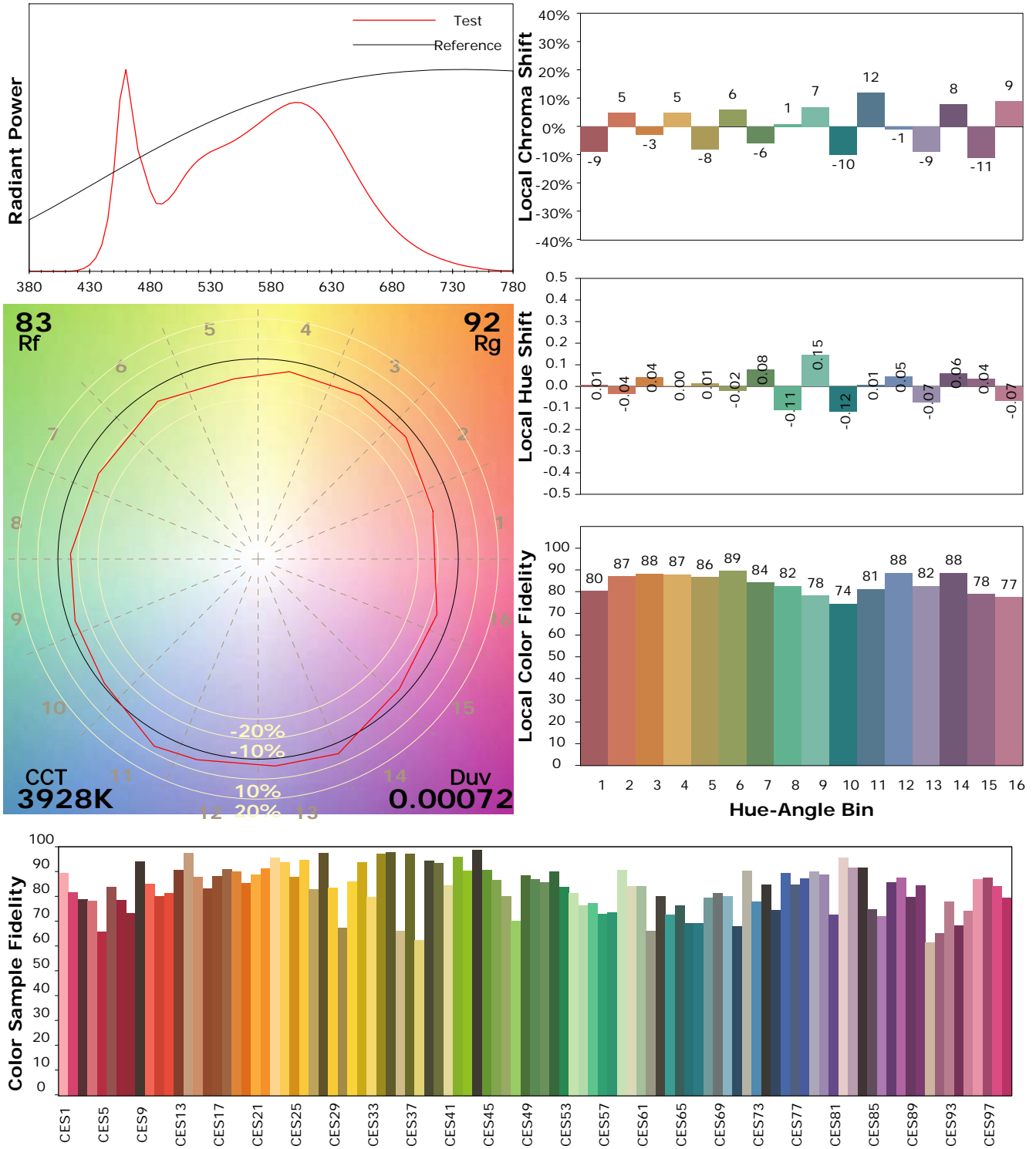
Test Device: Lisun LMS-9000B  
 Test Time: 2021-02-26 11:38:43  
 Inspector:

## IES TM-30-18 Color Rendition Report

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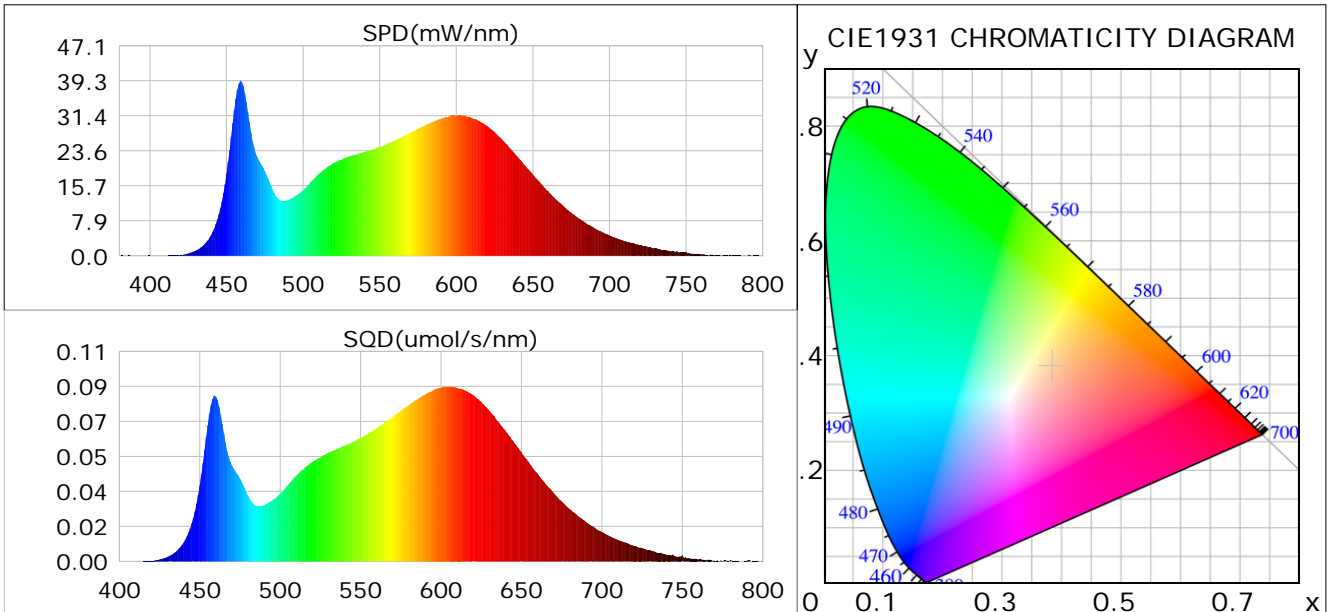
Condition: Tx:0.0°C, Ti:0.0°C, R.H.: 60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-02-26 11:38:43  
 Inspector:

## Plant optical param data

### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3842$   $y=0.3806$   $u(u')=0.2260$   $v=0.3359$   $v'=0.5038$   
 CCT:  $T_c=3928K$  ( $duv=0.00072$ ) Color Ratio:  $R=0.194$   $G=0.762$   $B=0.044$   
 Peak Wavelength: 459.2nm Half Bandwidth: 23.6nm  
 Dominant Wavelength: 579.0nm Color Purity: 0.295  
 CRI:  $R_a=86.9$



### Plant Optical Param

$ \mu_v(lm): 1814.50$	$Q_v(lm.s): 1814.50$
$ \mu_e, \dot{E}(W/nm): 5.62$	$Q_e(J): 5.62$
$ \mu_e(W): 5.51$	$ \mu_{fr}(W): 0.12$
$ \zeta_e: 0.32$	$ \zeta_{fr}: 0.01$
$PPE(umol/s/w): 1.50$	$K_{fr}: 0.04$
$Erb\_Ratio: 1.52$	$PPF(umol/s): 25.92$
$PF_{uv}(360-400)(umol/s): 0.00$	$PPF(400-500)(umol/s): 4.71$
$PPF(500-600)(umol/s): 11.46$	$PPF(600-700)(umol/s): 9.76$
$PPF_r(700-800)(umol/s): 0.70$	$PPF.t(umol): 25.92$
$ \mu_{ch-A.t}(J): 0.41$	$ \mu_{ch-A}(W): 0.41$
$ \mu_{ch-B.t}(J): 0.27$	$ \mu_{ch-B}(W): 0.27$
$ \mu_b.t(J): 1.21$	$ \mu_b(W): 1.21$
$ \mu_y.t(J): 2.48$	$ \mu_y(W): 2.48$
$ \mu_r.t(J): 1.87$	$ \mu_r(W): 1.87$

### Electric Parameters

Voltage: 230.70V	Current: 0.0810A	Power: 17.28W
Power Factor: 0.9160	Frequency: 49.99Hz	

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

Test Device: Lisun LMS-9000B  
 Test Time: 2021-02-26 11:38:43  
 Inspector: