

## Lightsource Test Report

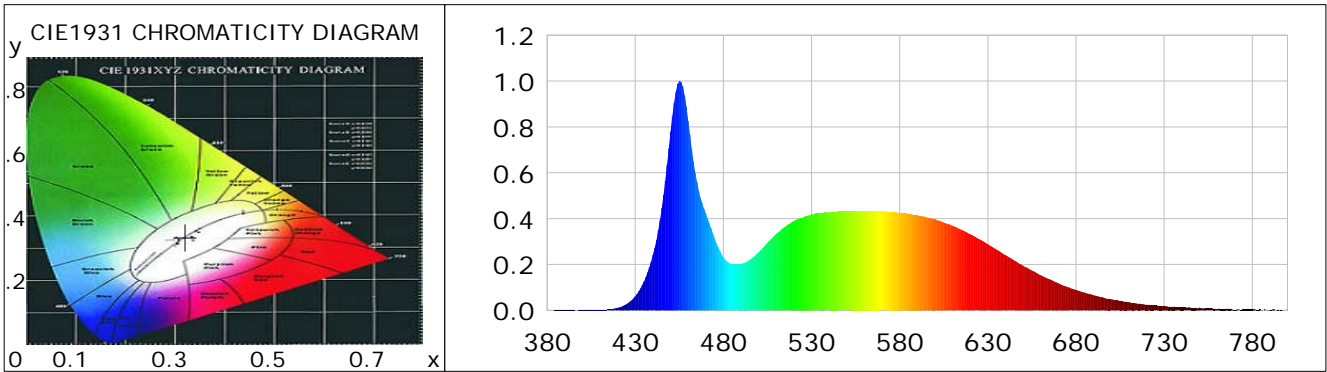
### Product Information

Product Category: LED-PL-Röhre  
 Product Spec: LED-PL-2G11-12W-CWM-TRF  
 Manufacturer: METOLIGHT  
 Buyer: 7709

Product Type: LED-PL-Röhre-2G11  
 Product Number: 1  
 Submitted Unit: 104976

### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3207$   $y=0.3344$   $u(u')=0.2013$   $v=0.3149$   $v'=0.4723$   
 CCT:  $T_c=6062K$  ( $duv=0.00202$ ) Color Ratio:  $R=0.144$   $G=0.801$   $B=0.055$   
 Peak Wavelength: 455.3nm Half Bandwidth: 20.8nm  
 Dominant Wavelength: 492.8nm Color Purity: 0.042  
 CRI:  $R_a=84.8$ ,  $avgR(1\sim14)=78.1$ ,  $avgR(1\sim15)=78.3$  TM30:  $R_f=82$ ,  $R_g=94$   
 GAI:  $GAI\_BB\_8=91.6$ ,  $GAI\_BB\_15=97.9$ ,  $GAI\_EES=87.5$   
 R1 =84 R2 =91 R3 =92 R4 =82 R5 =83 R6 =85 R7 =88 R8 =73  
 R9 =22 R10=75 R11=81 R12=54 R13=87 R14=96 R15=81  
 Color Quality Scale:  $Q_a=81.3$ ,  $Q_f=81.2$ ,  $Q_p=81.7$ ,  $Q_g=92.1$   
 Q1 =84 Q2 =98 Q3 =77 Q4 =69 Q5 =75 Q6 =79 Q7 =86 Q8 =90  
 Q9 =96 Q10=87 Q11=83 Q12=83 Q13=83 Q14=75 Q15=79



### Photometric Parameters

Luminous Flux: 1503.3 lm Efficiency: 112.35 lm/W Radiant Power: 4.837 W  
 Total mains efficacy: 132.13 lm/W Energy Efficiency Class: E (EU 2019/2015)  
 Pupil Flux: 2775.57 Plm Pupil Lumens Per Watt: 207.44 Plm/W Pupil Factor (Kp): 1.846  
 Circopic Flux: 6362.71 lm

### Electric Parameters

Voltage: 230.80V Current: 0.0610A Power: 13.38W  
 Power Factor: 0.9460 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: 45455 (2057) CCD Integration Time: 114.97 ms

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WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0008	0.0399	525	0.4044	21.3612	670	0.1185	6.2576
385	0.0008	0.0429	530	0.4175	22.0543	675	0.1025	5.4133
390	0.0012	0.0648	535	0.4235	22.3717	680	0.0891	4.7067
395	0.0014	0.0743	540	0.4266	22.5344	685	0.0771	4.0720
400	0.0008	0.0419	545	0.4307	22.7548	690	0.0662	3.4973
405	0.0014	0.0754	550	0.4314	22.7890	695	0.0568	3.0008
410	0.0025	0.1312	555	0.4335	22.8997	700	0.0488	2.5756
415	0.0046	0.2441	560	0.4329	22.8696	705	0.0417	2.2053
420	0.0112	0.5935	565	0.4332	22.8823	710	0.0359	1.8986
425	0.0269	1.4223	570	0.4307	22.7546	715	0.0291	1.5366
430	0.0619	3.2710	575	0.4298	22.7073	720	0.0251	1.3244
435	0.1257	6.6397	580	0.4249	22.4448	725	0.0217	1.1446
440	0.2411	12.7387	585	0.4211	22.2461	730	0.0201	1.0593
445	0.4467	23.5971	590	0.4156	21.9564	735	0.0158	0.8344
450	0.7791	41.1586	595	0.4057	21.4331	740	0.0140	0.7421
455	1.0000	52.8263	600	0.3973	20.9885	745	0.0112	0.5933
460	0.8271	43.6927	605	0.3830	20.2315	750	0.0123	0.6471
465	0.5599	29.5779	610	0.3688	19.4801	755	0.0086	0.4569
470	0.4228	22.3324	615	0.3516	18.5730	760	0.0055	0.2909
475	0.3137	16.5726	620	0.3322	17.5508	765	0.0060	0.3151
480	0.2314	12.2264	625	0.3113	16.4457	770	0.0039	0.2085
485	0.2012	10.6274	630	0.2882	15.2235	775	0.0027	0.1410
490	0.2023	10.6850	635	0.2652	14.0079	780	0.0026	0.1375
495	0.2211	11.6780	640	0.2415	12.7576	785	0.0036	0.1927
500	0.2541	13.4210	645	0.2174	11.4827	790	0.0016	0.0861
505	0.2952	15.5944	650	0.1946	10.2818	795	0.0010	0.0515
510	0.3338	17.6347	655	0.1741	9.1949	800	0.0052	0.2747
515	0.3645	19.2530	660	0.1535	8.1086			
520	0.3908	20.6468	665	0.1357	7.1683			

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

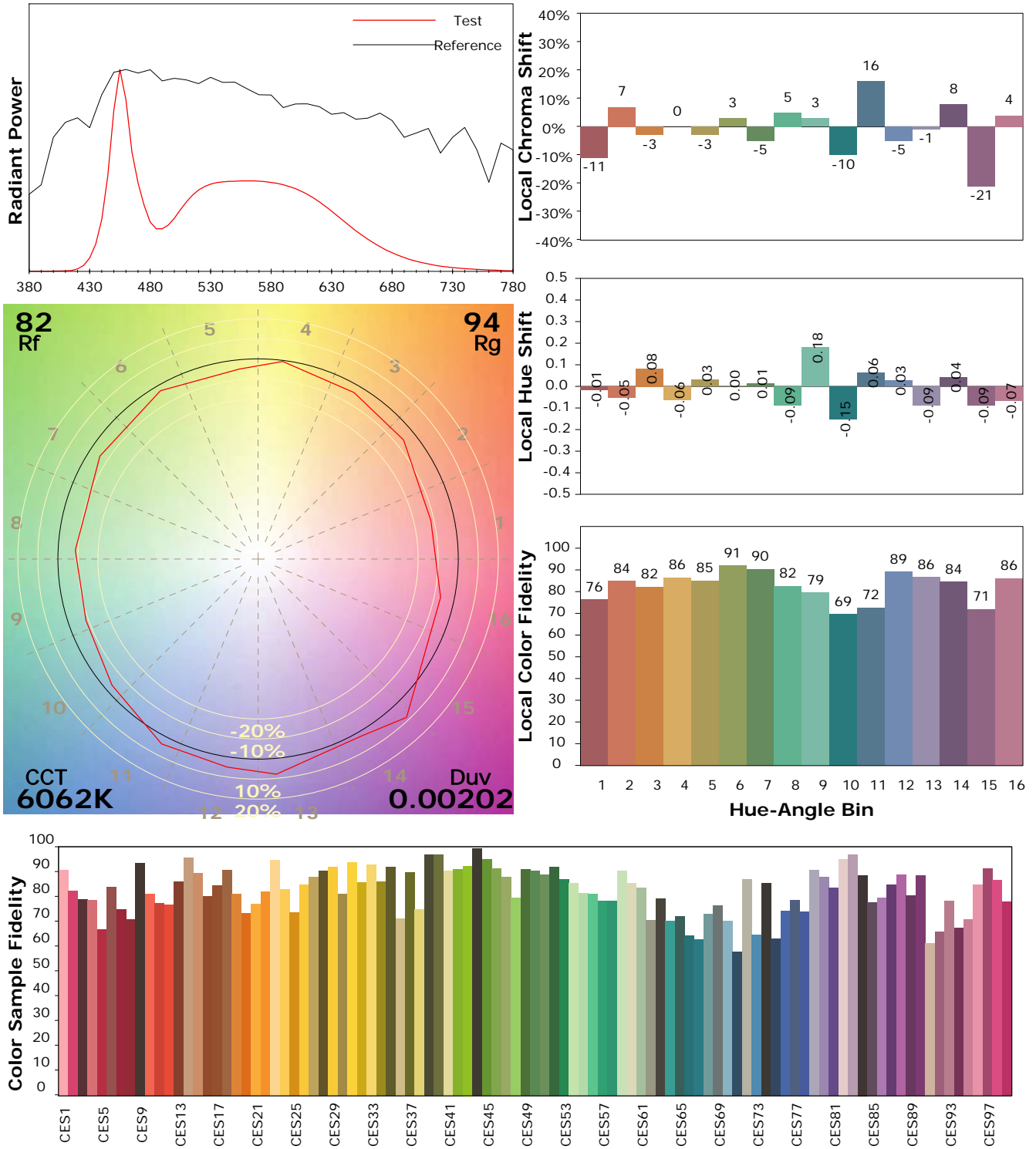
Test Device: Lisun LMS-9000B  
 Test Time: 2021-02-26 10:49:29  
 Inspector:

## IES TM-30-18 Color Rendition Report

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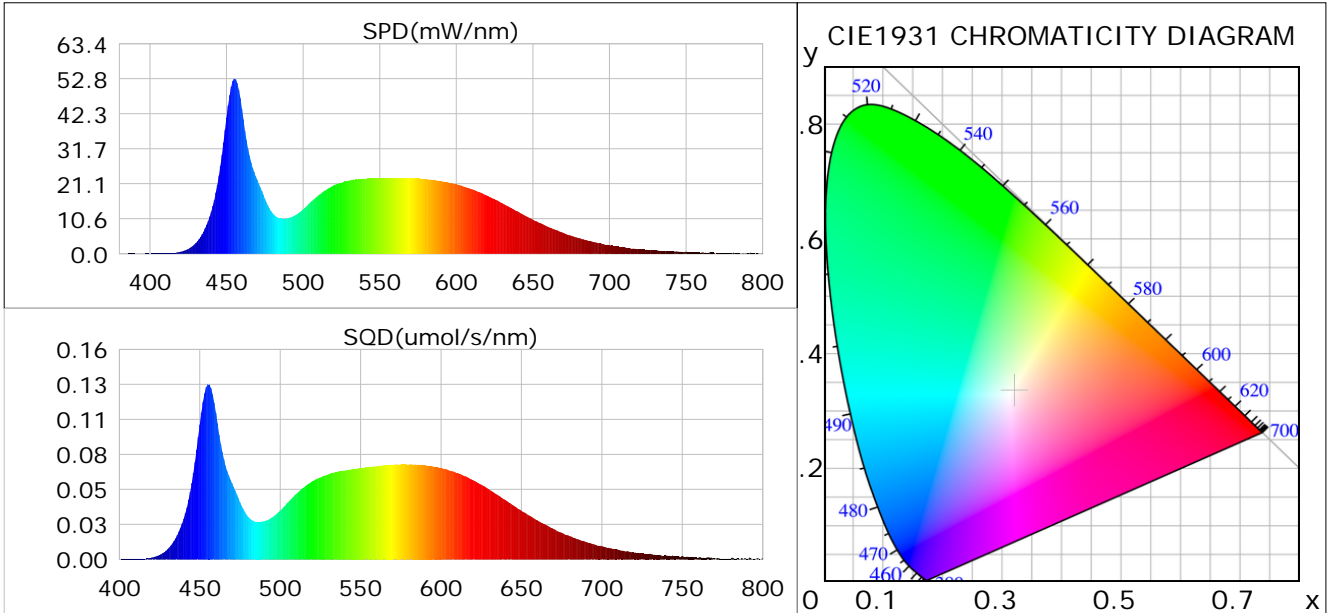
Condition: Tx:0.0°C, Ti:0.0°C, R.H.: 60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-02-26 10:49:29  
 Inspector:

## Plant optical param data

### CIE Colorimetric Parameters

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 Peak Wavelength: 455.3nm Half Bandwidth: 20.8nm  
 Dominant Wavelength: 492.8nm Color Purity: 0.042  
 CRI:  $R_a=84.8$



### Plant Optical Param

$ \mu_v(lm)$ : 1503.30	$Q_v(lm.s)$ : 1503.30
$ \mu_e, \dot{E}(W/nm)$ : 4.84	$Q_e(J)$ : 4.84
$ \mu_e(W)$ : 4.76	$ \mu_{fr}(W)$ : 0.08
$ \zeta_e$ : 0.36	$ \zeta_{fr}$ : 0.01
PPE( $\mu mol/s/w$ ): 1.61	Kfr: 0.03
Erb_Ratio: 0.71	PPF( $\mu mol/s$ ): 21.58
PFuv(360-400)( $\mu mol/s$ ): 0.00	PPF(400-500)( $\mu mol/s$ ): 5.94
PPF(500-600)( $\mu mol/s$ ): 9.87	PPF(600-700)( $\mu mol/s$ ): 5.77
PPfr(700-800)( $\mu mol/s$ ): 0.45	PPF.t( $\mu mol$ ): 21.58
$ \mu_{ch-A.t}(J)$ : 0.38	$ \mu_{ch-A}(W)$ : 0.38
$ \mu_{ch-B.t}(J)$ : 0.28	$ \mu_{ch-B}(W)$ : 0.28
$ \mu_b.t(J)$ : 1.54	$ \mu_b(W)$ : 1.54
$ \mu_y.t(J)$ : 2.15	$ \mu_y(W)$ : 2.15
$ \mu_r.t(J)$ : 1.11	$ \mu_r(W)$ : 1.11

### Electric Parameters

Voltage: 230.80V	Current: 0.0610A	Power: 13.38W
Power Factor: 0.9460	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 10:49:29  
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