

## Lightsource Test Report

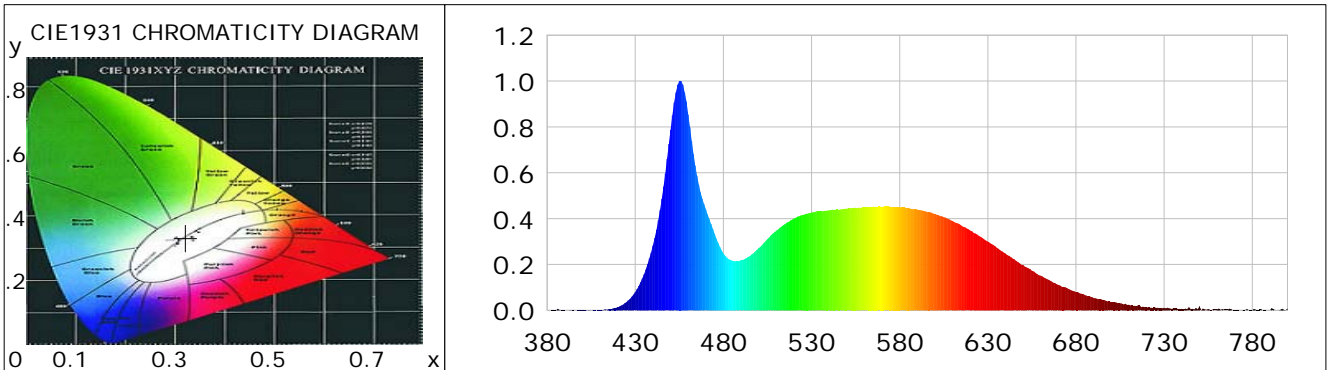
### Product Information

Product Category: LED-Röhre  
 Product Spec: LEDtube-055-5CWM-8W-TRF  
 Manufacturer: METOLIGHT  
 Buyer: 3283

Product Type: LED-Röhre-TRF  
 Product Number: 1  
 Submitted Unit: 103339

### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3211$   $y=0.3326$   $u(u')=0.2023$   $v=0.3143$   $v'=0.4714$   
 CCT:  $T_c=6050K$  ( $duv=0.00090$ ) Color Ratio:  $R=0.145$   $G=0.799$   $B=0.056$   
 Peak Wavelength: 455.6nm Half Bandwidth: 22.3nm  
 Dominant Wavelength: 490.9nm Color Purity: 0.042  
 CRI:  $R_a=84.9$ ,  $avgR(1\sim14)=78.4$ ,  $avgR(1\sim15)=78.6$  TM30:  $R_f=82$ ,  $R_g=94$   
 GAI:  $GAI\_BB\_8=92.2$ ,  $GAI\_BB\_15=98.1$ ,  $GAI\_EES=87.9$   
 R1 =84 R2 =91 R3 =93 R4 =83 R5 =84 R6 =85 R7 =88 R8 =72  
 R9 =20 R10=77 R11=82 R12=57 R13=87 R14=96 R15=81  
 Color Quality Scale:  $Q_a=81.2$ ,  $Q_f=81.1$ ,  $Q_p=81.6$ ,  $Q_g=92.1$   
 Q1 =83 Q2 =99 Q3 =77 Q4 =69 Q5 =76 Q6 =79 Q7 =86 Q8 =90  
 Q9 =96 Q10=87 Q11=82 Q12=82 Q13=83 Q14=74 Q15=78



### Photometric Parameters

Luminous Flux: 1878.2 lm Efficiency: 123.57 lm/W Radiant Power: 6.002 W  
 Total mains efficacy: 134.56 lm/W Energy Efficiency Class: E (EU 2019/2015)  
 Pupil Flux: 3469.94 Plm Pupil Lumens Per Watt: 228.29 Plm/W Pupil Factor (Kp): 1.847  
 Circopic Flux: 7971.35 lm

### Electric Parameters

Voltage: 230.00V Current: 0.0720A Power: 15.20W  
 Power Factor: 0.9200 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: 46459 (2542) CCD Integration Time: 395.67 ms

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

Test Device: Lisun LMS-9000B  
 Test Time: 2021-03-08 10:30:20  
 Inspector:

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WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0010	0.0626	525	0.4166	26.4253	670	0.1113	7.0609
385	0.0011	0.0695	530	0.4270	27.0886	675	0.0969	6.1456
390	0.0009	0.0553	535	0.4315	27.3737	680	0.0796	5.0501
395	0.0008	0.0477	540	0.4367	27.6992	685	0.0669	4.2425
400	0.0011	0.0678	545	0.4403	27.9273	690	0.0544	3.4514
405	0.0006	0.0352	550	0.4435	28.1355	695	0.0459	2.9106
410	0.0027	0.1692	555	0.4478	28.4057	700	0.0347	2.2034
415	0.0057	0.3605	560	0.4487	28.4601	705	0.0311	1.9723
420	0.0143	0.9095	565	0.4519	28.6649	710	0.0247	1.5684
425	0.0359	2.2760	570	0.4523	28.6927	715	0.0213	1.3492
430	0.0802	5.0858	575	0.4520	28.6735	720	0.0144	0.9123
435	0.1571	9.9665	580	0.4497	28.5280	725	0.0124	0.7837
440	0.2822	17.9036	585	0.4466	28.3322	730	0.0110	0.6952
445	0.4869	30.8857	590	0.4399	27.9029	735	0.0080	0.5074
450	0.7872	49.9354	595	0.4314	27.3622	740	0.0064	0.4072
455	0.9991	63.3760	600	0.4205	26.6761	745	0.0061	0.3883
460	0.8549	54.2271	605	0.4066	25.7909	750	0.0176	1.1148
465	0.5877	37.2796	610	0.3900	24.7377	755	0.0059	0.3722
470	0.4416	28.0151	615	0.3703	23.4896	760	0.0044	0.2770
475	0.3342	21.2015	620	0.3484	22.1004	765	0.0039	0.2493
480	0.2484	15.7593	625	0.3240	20.5497	770	0.0017	0.1052
485	0.2165	13.7362	630	0.2997	19.0115	775	0.0024	0.1507
490	0.2186	13.8683	635	0.2735	17.3521	780	0.0015	0.0976
495	0.2367	15.0119	640	0.2476	15.7049	785	0.0046	0.2912
500	0.2717	17.2369	645	0.2228	14.1335	790	0.0009	0.0582
505	0.3108	19.7179	650	0.1976	12.5356	795	0.0010	0.0617
510	0.3482	22.0897	655	0.1730	10.9720	800	0.0093	0.5884
515	0.3767	23.8962	660	0.1509	9.5698			
520	0.3994	25.3320	665	0.1309	8.3043			

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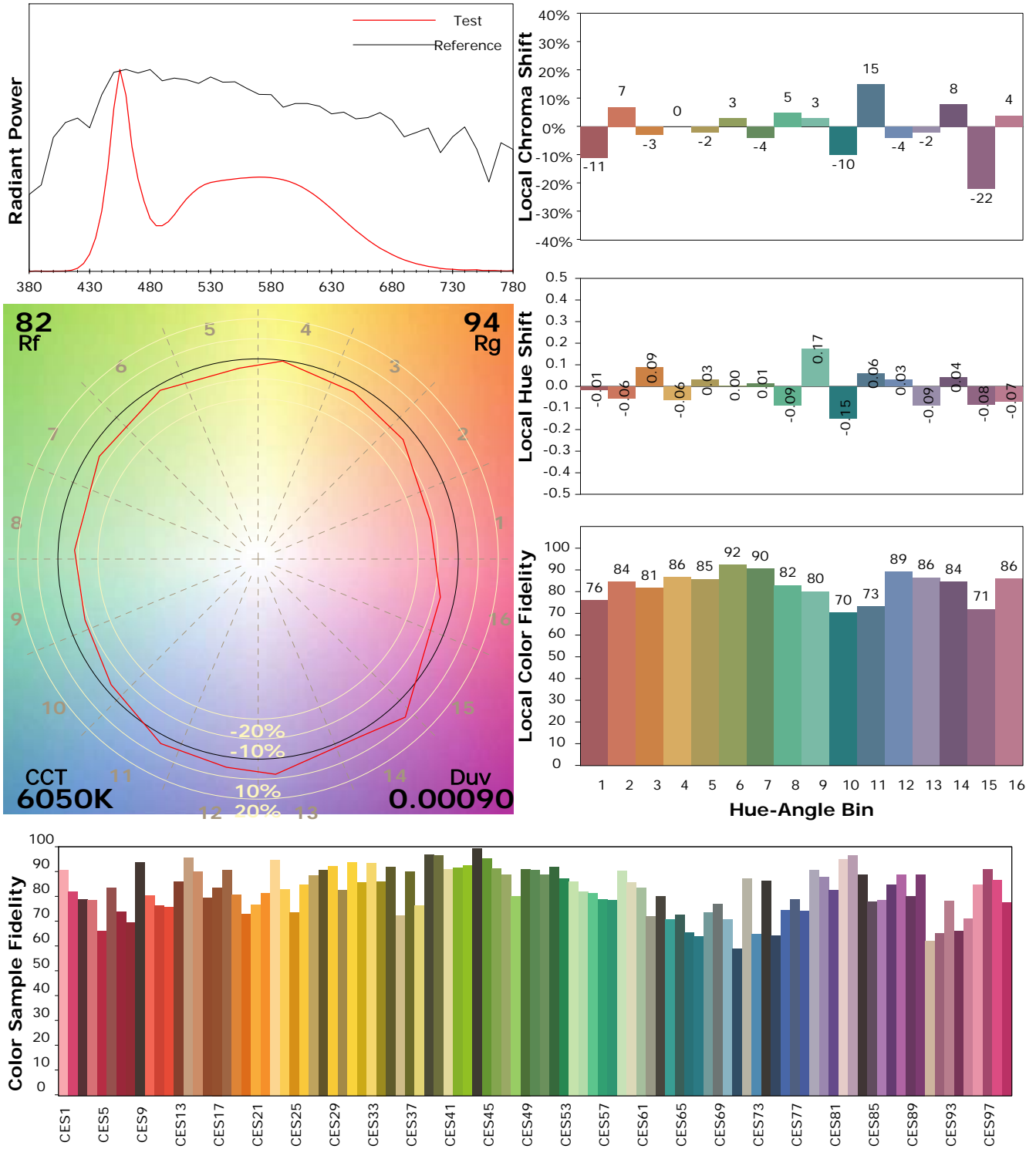
Test Device: Lisun LMS-9000B  
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 Inspector:

## IES TM-30-18 Color Rendition Report

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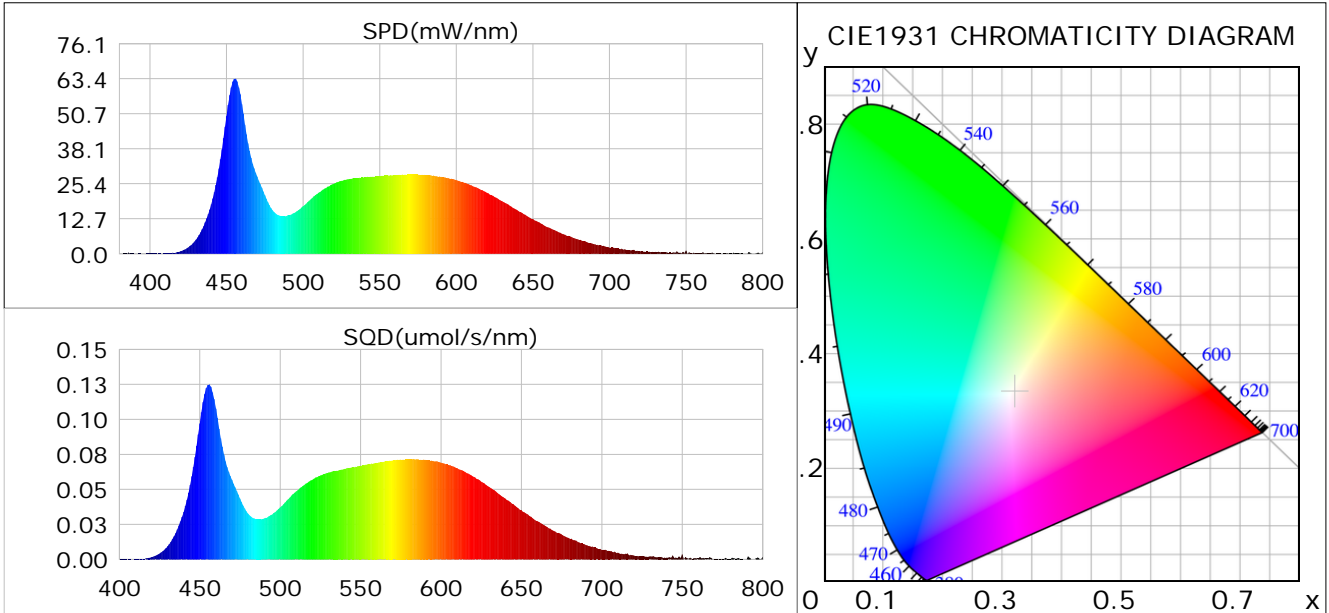
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 Operator: CRE

Test Device: Lisun LMS-9000B  
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## Plant optical param data

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 Peak Wavelength: 455.6nm Half Bandwidth: 22.3nm  
 Dominant Wavelength: 490.9nm Color Purity: 0.042  
 CRI:  $R_a=84.9$



### Plant Optical Param

$ \mu_v(lm): 1878.20$	$Q_v(lm.s): 1878.20$
$ \mu_e, \dot{E}(W/nm): 6.00$	$Q_e(J): 6.00$
$ \mu_e(W): 5.95$	$ \mu_{fr}(W): 0.06$
$ \zeta_e: 0.39$	$ \zeta_{fr}: 0.00$
$PPE(umol/s/w): 1.77$	$K_{fr}: 0.02$
$Erb\_Ratio: 0.68$	$PPF(umol/s): 26.88$
$PF_{uv}(360-400)(umol/s): 0.01$	$PPF(400-500)(umol/s): 7.53$
$PPF(500-600)(umol/s): 12.33$	$PPF(600-700)(umol/s): 7.02$
$PPF_r(700-800)(umol/s): 0.36$	$PPF.t(umol): 26.88$
$ \mu_{ch-A.t}(J): 0.47$	$ \mu_{ch-A}(W): 0.47$
$ \mu_{ch-B.t}(J): 0.35$	$ \mu_{ch-B}(W): 0.35$
$ \mu_b.t(J): 1.95$	$ \mu_b(W): 1.95$
$ \mu_y.t(J): 2.69$	$ \mu_y(W): 2.69$
$ \mu_r.t(J): 1.35$	$ \mu_r(W): 1.35$

### Electric Parameters

Voltage: 230.00V	Current: 0.0720A	Power: 15.20W
Power Factor: 0.9200	Frequency: 49.99Hz	

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