

Lightsource Test Report

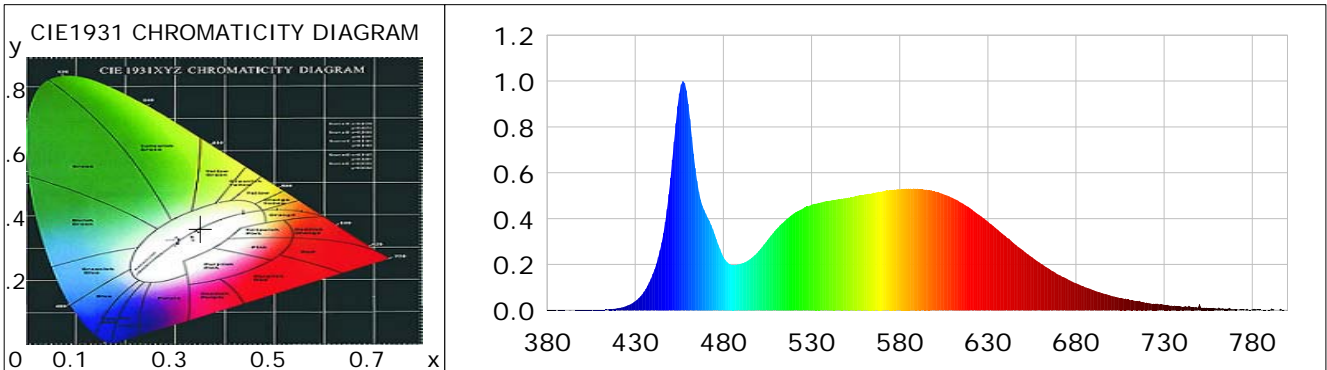
Product Information

Product Category: LED-Röhre
 Product Spec: LEDtube-060-8DWC-10W-24
 Manufacturer: METOLIGHT
 Buyer: 4624-20882

Product Type: 12/24
 Product Number: 3
 Submitted Unit: 101753

CIE Colorimetric Parameters

Chromaticity coordinates: $x=0.3513$ $y=0.3614$ $u(u')=0.2118$ $v=0.3269$ $v'=0.4903$
 CCT: $T_c=4811K$ ($duv=0.00245$) Color Ratio: $R=0.163$ $G=0.792$ $B=0.046$
 Peak Wavelength: 457.1nm Half Bandwidth: 17.6nm
 Dominant Wavelength: 572.7nm Color Purity: 0.139
 CRI: $R_a=83.3$, $avgR(1\sim14)=76.2$, $avgR(1\sim15)=76.2$ TM30: $R_f=81$, $R_g=92$
 GAI: $GAI_BB_8=87.8$, $GAI_BB_15=96.2$, $GAI_EES=78.4$
 R1 =82 R2 =91 R3 =95 R4 =79 R5 =80 R6 =85 R7 =86 R8 =68
 R9 =14 R10=76 R11=77 R12=50 R13=85 R14=97 R15=77
 Color Quality Scale: $Q_a=81.4$, $Q_f=81.7$, $Q_p=80.1$, $Q_g=90.2$
 Q1 =80 Q2 =97 Q3 =79 Q4 =70 Q5 =74 Q6 =77 Q7 =83 Q8 =89
 Q9 =97 Q10=90 Q11=86 Q12=85 Q13=85 Q14=75 Q15=77



Photometric Parameters

Luminous Flux: 1089.2 lm Efficiency: 119.56 lm/W Radiant Power: 3.351 W
 Total mains efficacy: 140.60 lm/W Energy Efficiency Class: D (EU 2019/2015)
 Pupil Flux: 1822.19 Plm Pupil Lumens Per Watt: 200.02 Plm/W Pupil Factor (Kp): 1.673
 Circopic Flux: 3957.22 lm

Electric Parameters

Voltage: 24.010V Current: 0.3380A Power: 9.11W
 Power Factor: 0.6920 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: 43250 (2601) CCD Integration Time: 149.90 ms

Lightsource Test Report

Product Information

Product Category: LED-Röhre
 Product Spec: LEDtube-060-8DWC-10W-24
 Manufacturer: METOLIGHT
 Buyer: 4624-20882

Product Type: 12/24
 Product Number: 3
 Submitted Unit: 101753

WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0013	0.0426	525	0.4439	14.4394	670	0.1558	5.0691
385	0.0008	0.0274	530	0.4605	14.9802	675	0.1371	4.4585
390	0.0013	0.0433	535	0.4695	15.2730	680	0.1187	3.8603
395	0.0006	0.0189	540	0.4780	15.5484	685	0.1010	3.2849
400	0.0014	0.0456	545	0.4840	15.7451	690	0.0879	2.8599
405	0.0010	0.0322	550	0.4902	15.9473	695	0.0742	2.4147
410	0.0030	0.0971	555	0.4996	16.2533	700	0.0634	2.0628
415	0.0049	0.1592	560	0.5054	16.4395	705	0.0544	1.7689
420	0.0094	0.3059	565	0.5133	16.6967	710	0.0468	1.5217
425	0.0190	0.6191	570	0.5185	16.8670	715	0.0400	1.3026
430	0.0398	1.2947	575	0.5248	17.0711	720	0.0337	1.0970
435	0.0814	2.6475	580	0.5276	17.1645	725	0.0289	0.9408
440	0.1585	5.1575	585	0.5310	17.2728	730	0.0243	0.7913
445	0.2961	9.6339	590	0.5309	17.2697	735	0.0192	0.6240
450	0.5775	18.7876	595	0.5268	17.1369	740	0.0157	0.5096
455	0.9454	30.7537	600	0.5181	16.8542	745	0.0151	0.4914
460	0.9010	29.3112	605	0.5059	16.4578	750	0.0278	0.9053
465	0.5646	18.3679	610	0.4902	15.9471	755	0.0098	0.3202
470	0.4216	13.7152	615	0.4694	15.2689	760	0.0074	0.2410
475	0.3318	10.7949	620	0.4450	14.4768	765	0.0081	0.2626
480	0.2327	7.5695	625	0.4161	13.5372	770	0.0058	0.1891
485	0.1972	6.4152	630	0.3874	12.6013	775	0.0051	0.1672
490	0.2034	6.6153	635	0.3551	11.5503	780	0.0045	0.1463
495	0.2221	7.2251	640	0.3235	10.5231	785	0.0037	0.1217
500	0.2583	8.4031	645	0.2908	9.4608	790	0.0015	0.0478
505	0.3065	9.9707	650	0.2612	8.4957	795	0.0007	0.0239
510	0.3541	11.5198	655	0.2320	7.5466	800	0.0041	0.1339
515	0.3912	12.7250	660	0.2041	6.6391			
520	0.4225	13.7427	665	0.1797	5.8447			

Condition: Tx:22.0'C, Ti:0.0'C, R.H.:60%
 Test Lab:
 Operator: CRE

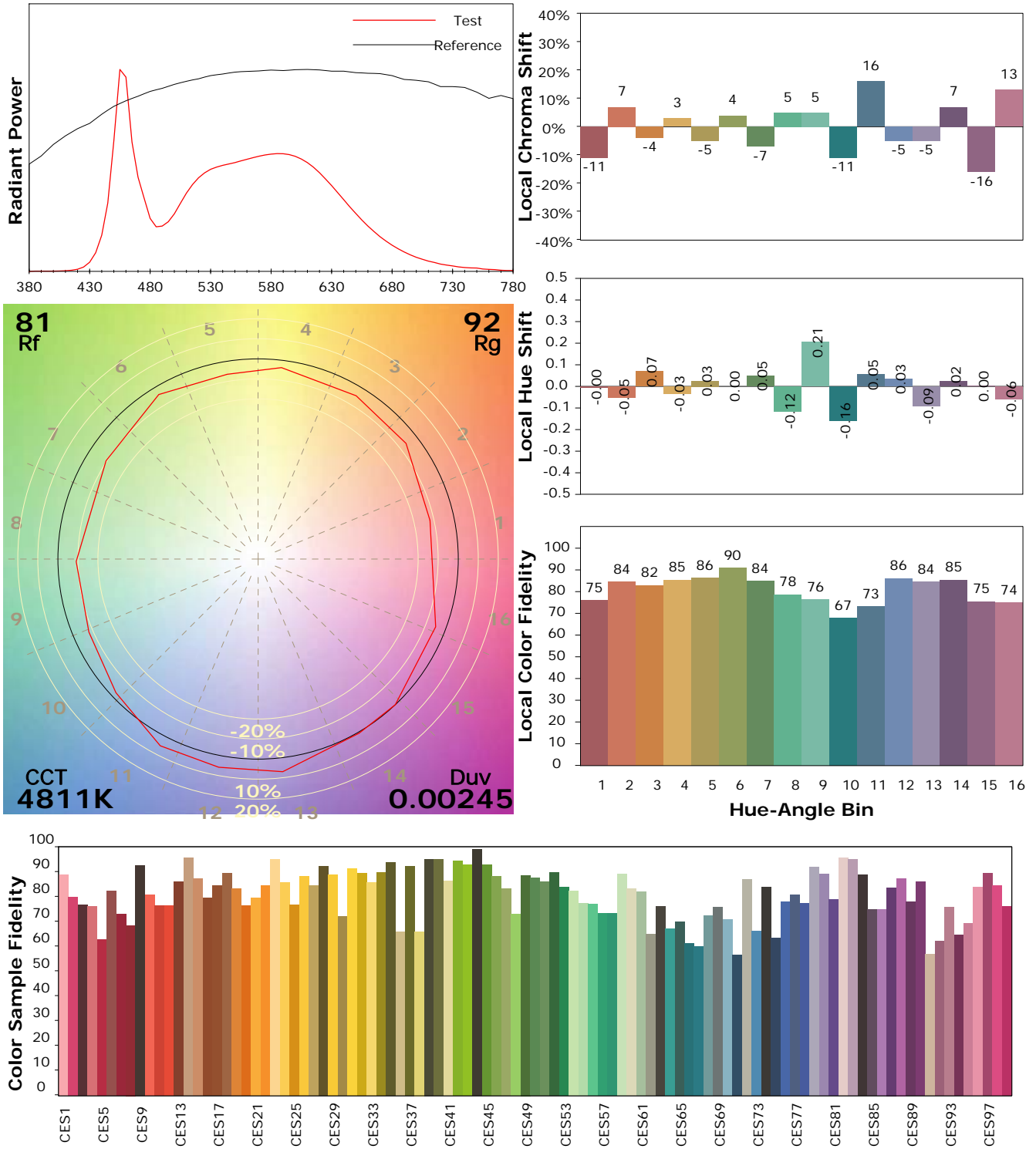
Test Device: Lisun LMS-9000B
 Test Time: 2021-02-15 15:01:48
 Inspector:

IES TM-30-18 Color Rendition Report

Product Information

Product Category: LED-Röhre
 Product Spec: LEDtube-060-8DWC-10W-24
 Manufacturer: METOLIGHT
 Buyer: 4624-20882

Product Type: 12/24
 Product Number: 3
 Submitted Unit: 101753



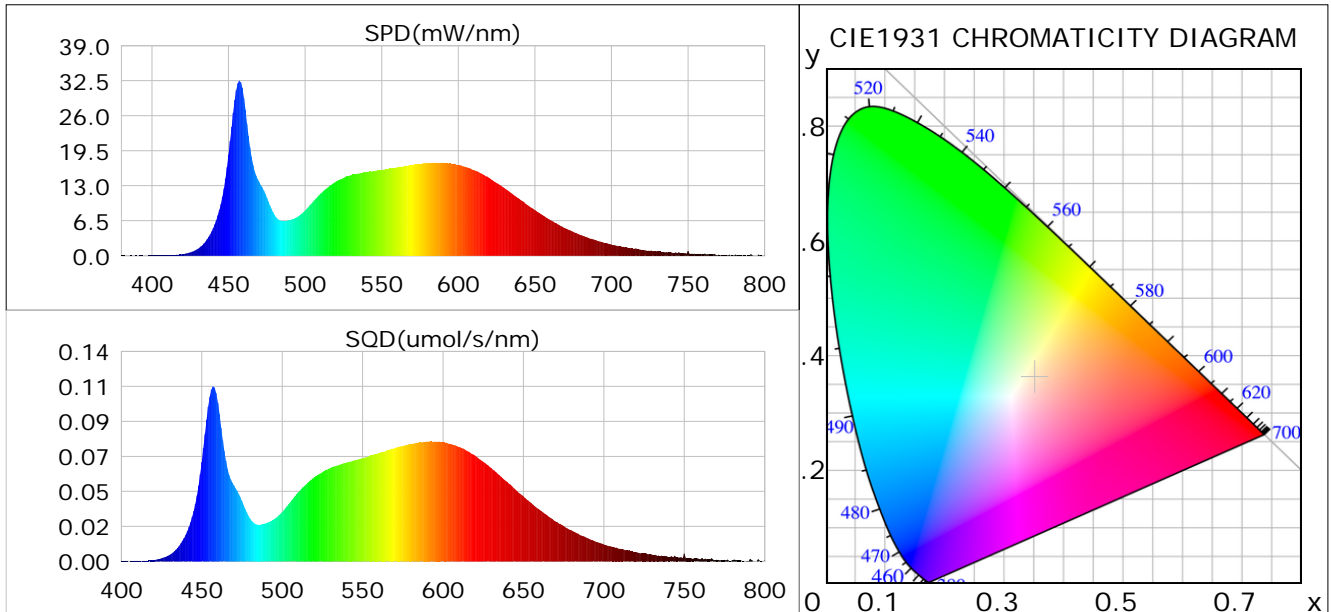
Condition: Tx:22.0°C, Ti:0.0°C, R.H.:60%
 Test Lab:
 Operator: CRE

Test Device: Lisun LMS-9000B
 Test Time: 2021-02-15 15:01:48
 Inspector:

Plant optical param data

CIE Colorimetric Parameters

Chromaticity coordinates: $x=0.3513$ $y=0.3614$ $u(u')=0.2118$ $v=0.3269$ $v'=0.4903$
 CCT: $T_c=4811K$ ($duv=0.00245$) Color Ratio: $R=0.163$ $G=0.792$ $B=0.046$
 Peak Wavelength: 457.1nm Half Bandwidth: 17.6nm
 Dominant Wavelength: 572.7nm Color Purity: 0.139
 CRI: $R_a=83.3$



Plant Optical Param

$ \mu_v(lm): 1089.20$	$Q_v(lm.s): 1089.20$
$ \mu_e, \dot{E}(W/nm): 3.35$	$Q_e(J): 3.35$
$ \mu_e(W): 3.29$	$ \mu_{fr}(W): 0.06$
$ \zeta_e: 0.36$	$ \zeta_{fr}: 0.01$
$PPE(umol/s/w): 1.67$	$K_{fr}: 0.04$
$Erb_Ratio: 1.02$	$PPF(umol/s): 15.19$
$PF_{uv}(360-400)(umol/s): 0.00$	$PPF(400-500)(umol/s): 3.38$
$PPF(500-600)(umol/s): 7.08$	$PPF(600-700)(umol/s): 4.73$
$PPF_{fr}(700-800)(umol/s): 0.37$	$PPF.t(umol): 15.19$
$ \mu_{ch-A.t}(J): 0.25$	$ \mu_{ch-A}(W): 0.25$
$ \mu_{ch-B.t}(J): 0.18$	$ \mu_{ch-B}(W): 0.18$
$ \mu_b.t(J): 0.87$	$ \mu_b(W): 0.87$
$ \mu_y.t(J): 1.54$	$ \mu_y(W): 1.54$
$ \mu_r.t(J): 0.91$	$ \mu_r(W): 0.91$

Electric Parameters

Voltage: 24.010V	Current: 0.3380A	Power: 9.11W
Power Factor: 0.6920	Frequency: 49.99Hz	

Condition: $T_x: 22.0^\circ C$, $T_i: 0.0^\circ C$, R.H.: 60%
 Test Lab:
 Operator: CRE

Test Device: Lisun LMS-9000B
 Test Time: 2021-02-15 15:01:48
 Inspector: