

## Lightsource Test Report

### Product Information

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

Product Type: LED-Röhre-Special  
 Product Number: 1  
 Submitted Unit: 104328

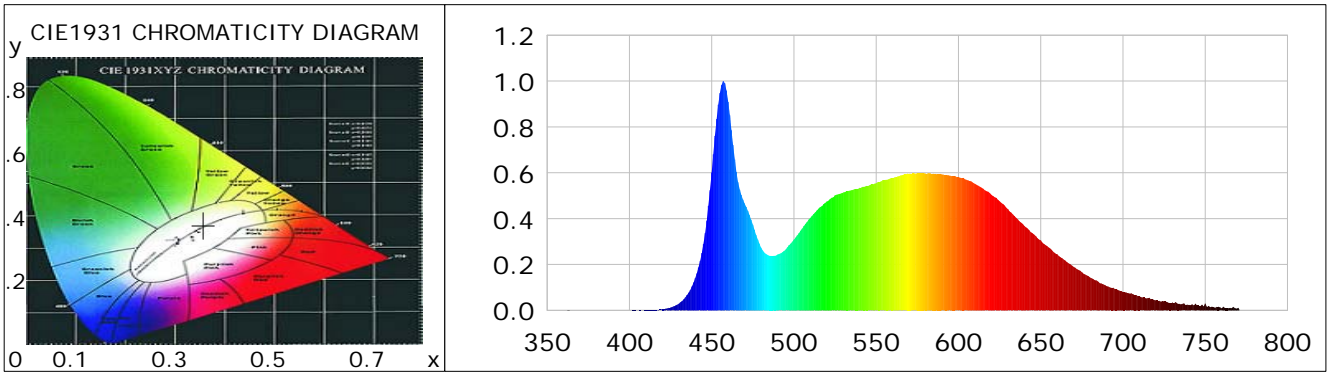
### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3572$   $y=0.3719$   $u(u')=0.2117$   $v=0.3307$   $v'=0.4960$   
 CCT:  $T_c=4660K$  ( $duv=0.00529$ ) Color Ratio:  $R=0.163$   $G=0.792$   $B=0.045$   
 Peak Wavelength: 457.1nm Half Bandwidth: 19.5nm  
 Dominant Wavelength: 572.3nm Color Purity: 0.188  
 CRI:  $R_a=82.7$ ,  $avgR(1\sim14)=75.5$ ,  $avgR(1\sim15)=75.5$  TM30:  $R_f=81$ ,  $R_g=90$   
 GAI:  $GAI\_BB\_8=84.3$ ,  $GAI\_BB\_15=93.2$ ,  $GAI\_EES=73.9$   

R1 =81	R2 =90	R3 =95	R4 =78	R5 =79	R6 =85	R7 =86	R8 =66
R9 =12	R10=76	R11=76	R12=50	R13=84	R14=98	R15=75	

Color Quality Scale:  $Q_a=81.8$ ,  $Q_f=82.2$ ,  $Q_p=79.7$ ,  $Q_g=89.0$   

Q1 =79	Q2 =96	Q3 =81	Q4 =72	Q5 =75	Q6 =76	Q7 =82	Q8 =89
Q9 =97	Q10=92	Q11=88	Q12=87	Q13=86	Q14=74	Q15=77	



### Photometric Parameters

Luminous Flux: 1057.9 lm	Efficiency: 117.54 lm/W	Radiant Power: 3.226 W
Total mains efficacy: 138.23 lm/W	Energy Efficiency Class: D (EU 2019/2015)	
Pupil Flux: 1745.42 Plm	Pupil Lumens Per Watt: 193.94 Plm/W	Pupil Factor (Kp): 1.650
Cirtopic Flux: 3748.31 lm		

### Electric Parameters

Voltage: 24.010V	Current: 0.3750A	Power: 9.00W
Power Factor: 0.6990	Frequency: 49.99Hz	

### Test Information

Scan Range: 350~800:1nm	Photometric Method: sphere-spectroradiometer
Stabilization Time: 0 ms ALC.: 1.0000	Photometric Condition: Sphere diameter: 2.00m, 4PI
Max of Signal: 52430 (2435)	CCD Integration Time: 170.00 ms

Condition: Tx:19.9'C, Ti:0.0'C, R.H.:60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-01-13 12:49:15  
 Inspector:

## Lightsource Test Report

### Product Information

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

Product Type: LED-Röhre-Special  
 Product Number: 1  
 Submitted Unit: 104328

WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0005	0.0141	525	0.2655	7.4171	670	0.3692	10.3142
385	0.0004	0.0104	530	0.3086	8.6221	675	0.3365	9.4004
390	0.0004	0.0108	535	0.3565	9.9608	680	0.3053	8.5282
395	0.0001	0.0035	540	0.4037	11.2794	685	0.2730	7.6273
400	0.0004	0.0114	545	0.4434	12.3887	690	0.2450	6.8453
405	0.0002	0.0069	550	0.4748	13.2638	695	0.2165	6.0498
410	0.0003	0.0080	555	0.5025	14.0388	700	0.1898	5.3039
415	0.0003	0.0082	560	0.5144	14.3715	705	0.1666	4.6552
420	0.0004	0.0106	565	0.5240	14.6388	710	0.1435	4.0103
425	0.0001	0.0027	570	0.5341	14.9231	715	0.1248	3.4868
430	0.0006	0.0178	575	0.5428	15.1662	720	0.1058	2.9572
435	0.0004	0.0115	580	0.5546	15.4948	725	0.0929	2.5943
440	0.0012	0.0348	585	0.5675	15.8545	730	0.0802	2.2415
445	0.0022	0.0628	590	0.5771	16.1221	735	0.0747	2.0864
450	0.0052	0.1445	595	0.5887	16.4472	740	0.0621	1.7341
455	0.0123	0.3433	600	0.5964	16.6618	745	0.0536	1.4987
460	0.0291	0.8138	605	0.5989	16.7333	750	0.0439	1.2268
465	0.0664	1.8544	610	0.5963	16.6602	755	0.0397	1.1084
470	0.1408	3.9327	615	0.5955	16.6376	760	0.0342	0.9561
475	0.2896	8.0898	620	0.5932	16.5722	765	0.0260	0.7267
480	0.6010	16.7922	625	0.5877	16.4179	770	0.0243	0.6784
485	0.9477	26.4765	630	0.5801	16.2082	775	0.0217	0.6067
490	0.9096	25.4136	635	0.5691	15.8987	780	0.0297	0.8303
495	0.6036	16.8644	640	0.5518	15.4154	785	0.0143	0.4003
500	0.4669	13.0450	645	0.5310	14.8359	790	0.0093	0.2605
505	0.3741	10.4521	650	0.5039	14.0787	795	0.0111	0.3102
510	0.2738	7.6496	655	0.4759	13.2969	800	0.0111	0.3092
515	0.2384	6.6609	660	0.4418	12.3419			
520	0.2433	6.7965	665	0.4035	11.2731			

Condition: Tx:19.9'C, Ti:0.0'C, R.H.:60%  
 Test Lab:  
 Operator: CRE

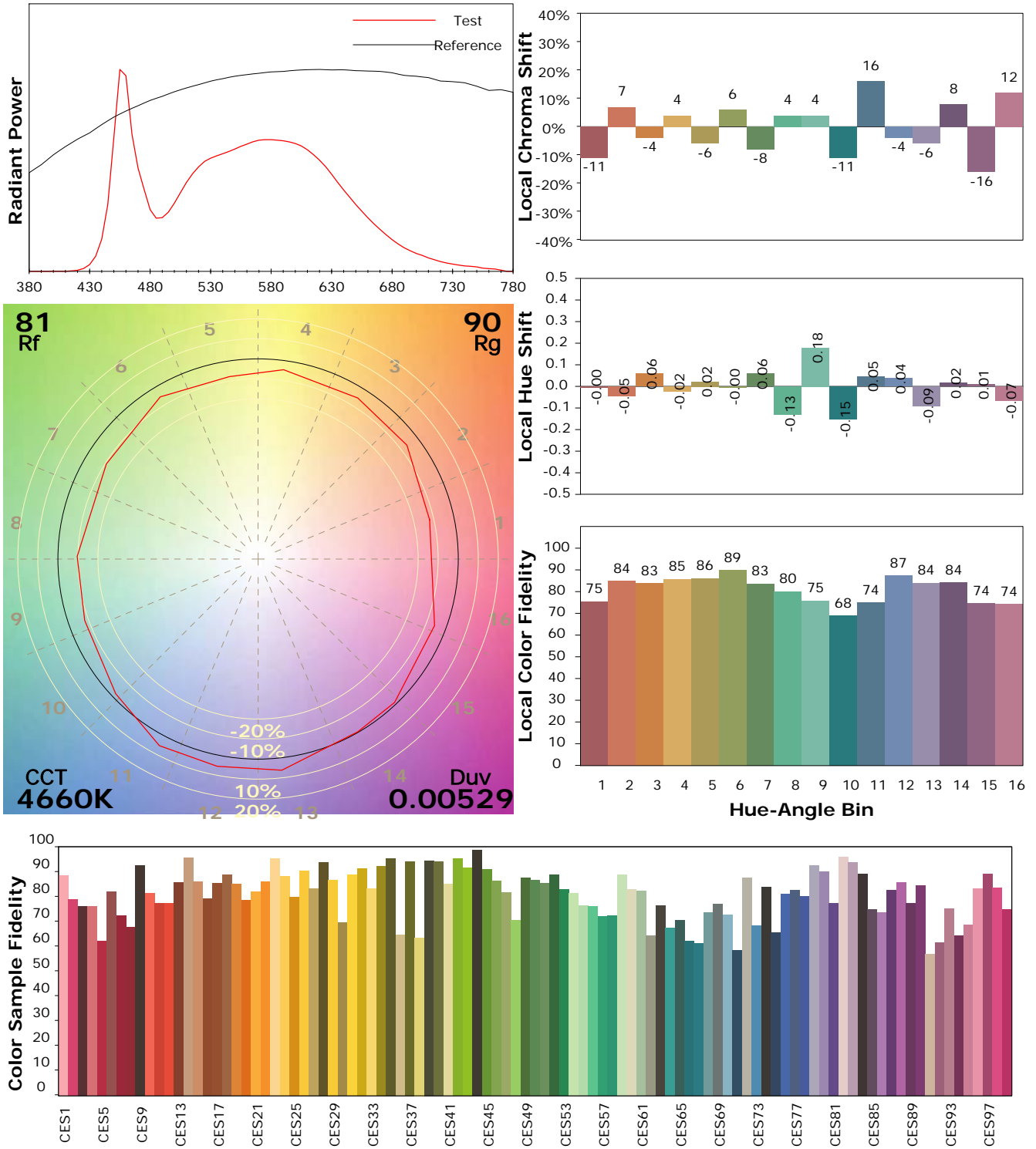
Test Device: Lisun LMS-9000B  
 Test Time: 2021-01-13 12:49:15  
 Inspector:

## IES TM-30-18 Color Rendition Report

### Product Information

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

Product Type: LED-Röhre-Special  
 Product Number: 1  
 Submitted Unit: 104328



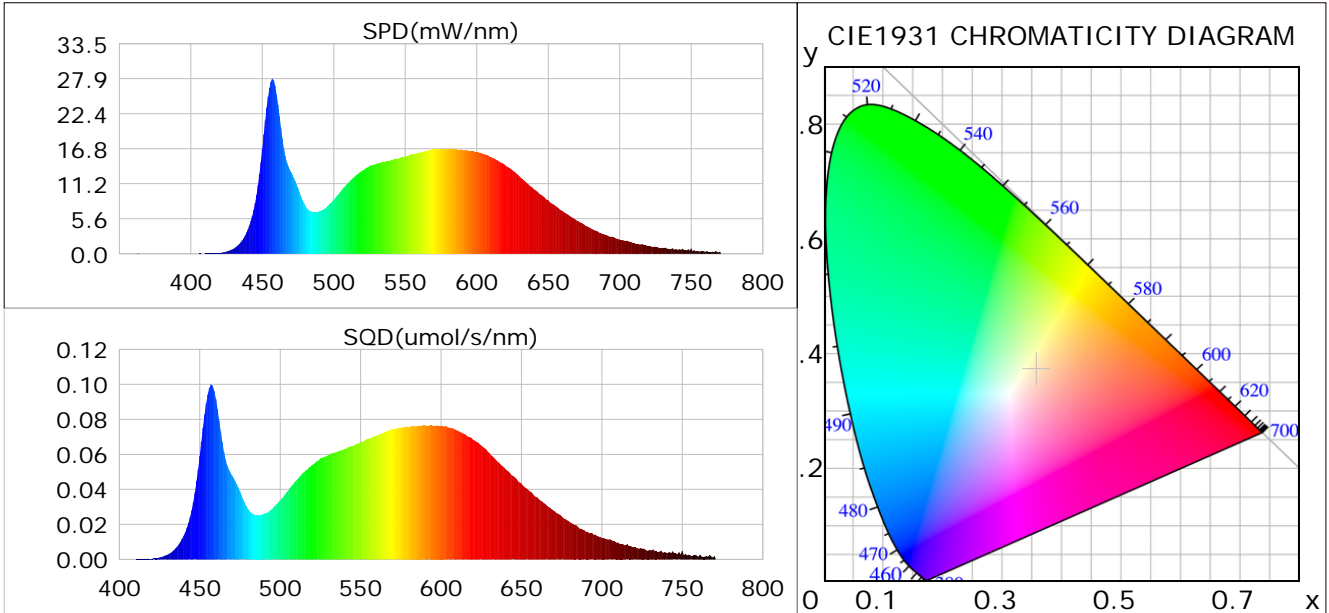
Condition: Tx: 19.9°C, Ti: 0.0°C, R.H.: 60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-01-13 12:49:15  
 Inspector:

## Plant optical param data

### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3572$   $y=0.3719$   $u(u')=0.2117$   $v=0.3307$   $v'=0.4960$   
 CCT:  $T_c=4660K$  ( $duv=0.00529$ ) Color Ratio:  $R=0.163$   $G=0.792$   $B=0.045$   
 Peak Wavelength: 457.1nm Half Bandwidth: 19.5nm  
 Dominant Wavelength: 572.3nm Color Purity: 0.188  
 CRI:  $R_a=82.7$



### Plant Optical Param

$\mu_v(lm)$ : 1057.90	$Q_v(lm.s)$ : 1057.90
$\mu_e, \dot{E}(W/nm)$ : 3.23	$Q_e(J)$ : 3.23
$\mu_e(W)$ : 3.46	$\mu_{fr}(W)$ : 0.07
$\zeta_e$ : 0.38	$\zeta_{fr}$ : 0.01
PPE(umol/s/w): 1.63	Kfr: 0.04
Erb_Ratio: 1.12	PPF(umol/s): 14.65
PFuv(360-400)(umol/s): 0.00	PPF(400-500)(umol/s): 3.07
PPF(500-600)(umol/s): 6.88	PPF(600-700)(umol/s): 4.70
PPfr(700-800)(umol/s): 0.40	PPF.t(umol): 14.65
$\mu_{ch-A.t}(J)$ : 0.23	$\mu_{ch-A}(W)$ : 0.23
$\mu_{ch-B.t}(J)$ : 0.16	$\mu_{ch-B}(W)$ : 0.16
$\mu_b.t(J)$ : 0.87	$\mu_b(W)$ : 0.87
$\mu_y.t(J)$ : 1.63	$\mu_y(W)$ : 1.63
$\mu_r.t(J)$ : 0.98	$\mu_r(W)$ : 0.98

### Electric Parameters

Voltage: 24.010V	Current: 0.3750A	Power: 9.00W
Power Factor: 0.6990	Frequency: 49.99Hz	

Condition: Tx: 19.9°C, Ti: 0.0°C, R.H.: 60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-01-13 12:49:15  
 Inspector: