

## Lightsource Test Report

### Product Information

Product Category: LED-Röhre  
 Product Spec: LEDtube-060-8CWM-09W-SCE-RM-160  
 Manufacturer: METOLIGHT  
 Buyer: 6961  
 Product Type: LED-Röhre SCE  
 Product Number: 1  
 Submitted Unit: 102589

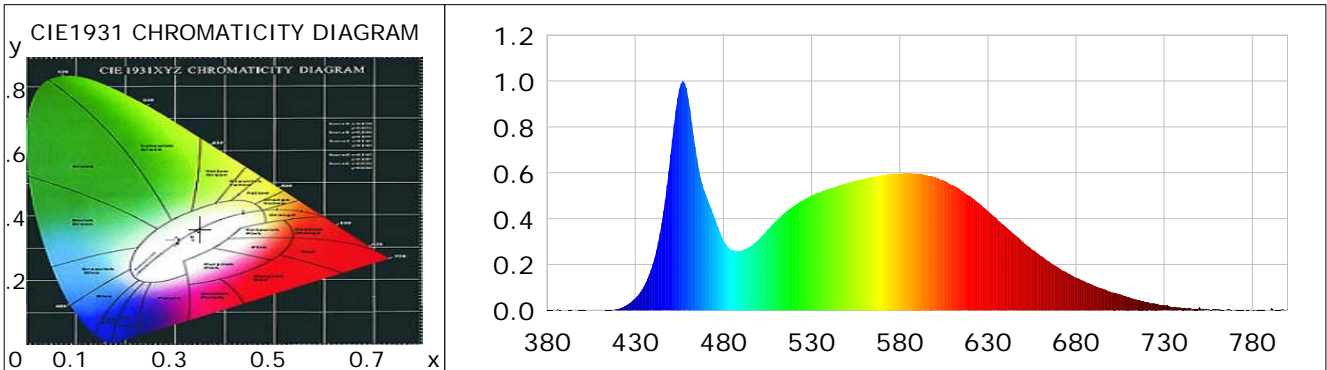
### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3506$   $y=0.3600$   $u(u')=0.2119$   $v=0.3263$   $v'=0.4895$   
 CCT:  $T_c=4831K$  ( $duv=0.00200$ ) Color Ratio:  $R=0.162$   $G=0.789$   $B=0.049$   
 Peak Wavelength: 457.0nm Half Bandwidth: 23.0nm  
 Dominant Wavelength: 572.8nm Color Purity: 0.132  
 CRI:  $R_a=83.5$ ,  $avgR(1\sim14)=76.7$ ,  $avgR(1\sim15)=76.8$  TM30:  $R_f=81$ ,  $R_g=91$   
 GAI:  $GAI\_BB\_8=87.8$ ,  $GAI\_BB\_15=95.9$ ,  $GAI\_EES=78.6$   

R1 =82	R2 =92	R3 =95	R4 =78	R5 =81	R6 =86	R7 =86	R8 =68
R9 =16	R10=78	R11=76	R12=53	R13=86	R14=98	R15=78	

Color Quality Scale:  $Q_a=81.5$ ,  $Q_f=81.9$ ,  $Q_p=80.0$ ,  $Q_g=89.9$   

Q1 =80	Q2 =96	Q3 =80	Q4 =71	Q5 =74	Q6 =76	Q7 =83	Q8 =89
Q9 =97	Q10=91	Q11=86	Q12=85	Q13=85	Q14=75	Q15=78	



### Photometric Parameters

Luminous Flux: 1391.4 lm Efficiency: 152.23 lm/W Radiant Power: 4.313 W  
 Total mains efficacy: 179.02 lm/W Energy Efficiency Class: C (EU 2019/2015)  
 Pupil Flux: 2347.03 Plm Pupil Lumens Per Watt: 256.79 Plm/W Pupil Factor (Kp): 1.687  
 Circopic Flux: 5136.61 lm

### Electric Parameters

Voltage: 231.20V Current: 0.0390A Power: 9.14W  
 Power Factor: 0.9000 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: 46942 (2467) CCD Integration Time: 228.09 ms

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

Test Device: Lisun LMS-9000B  
 Test Time: 2021-01-06 11:40:08  
 Inspector:

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WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0007	0.0271	525	0.4791	17.7261	670	0.1865	6.8993
385	0.0006	0.0238	530	0.5008	18.5275	675	0.1645	6.0875
390	0.0011	0.0417	535	0.5151	19.0568	680	0.1429	5.2867
395	0.0002	0.0073	540	0.5299	19.6039	685	0.1260	4.6604
400	0.0007	0.0260	545	0.5437	20.1151	690	0.1089	4.0287
405	0.0000	0.0011	550	0.5547	20.5234	695	0.0947	3.5033
410	0.0007	0.0242	555	0.5654	20.9194	700	0.0793	2.9353
415	0.0014	0.0519	560	0.5736	21.2232	705	0.0699	2.5857
420	0.0065	0.2396	565	0.5819	21.5293	710	0.0582	2.1549
425	0.0221	0.8187	570	0.5901	21.8322	715	0.0455	1.6836
430	0.0529	1.9580	575	0.5925	21.9230	720	0.0360	1.3302
435	0.1049	3.8820	580	0.5974	22.1016	725	0.0288	1.0653
440	0.2031	7.5135	585	0.5959	22.0494	730	0.0227	0.8395
445	0.3822	14.1414	590	0.5956	22.0375	735	0.0134	0.4950
450	0.6782	25.0937	595	0.5901	21.8347	740	0.0100	0.3690
455	0.9663	35.7533	600	0.5814	21.5111	745	0.0086	0.3196
460	0.9261	34.2633	605	0.5668	20.9692	750	0.0144	0.5333
465	0.6619	24.4910	610	0.5459	20.1977	755	0.0056	0.2062
470	0.5048	18.6774	615	0.5223	19.3238	760	0.0038	0.1390
475	0.4039	14.9432	620	0.4989	18.4592	765	0.0031	0.1156
480	0.3059	11.3181	625	0.4670	17.2772	770	0.0029	0.1079
485	0.2624	9.7102	630	0.4334	16.0362	775	0.0023	0.0841
490	0.2608	9.6476	635	0.4006	14.8220	780	0.0004	0.0141
495	0.2778	10.2772	640	0.3652	13.5121	785	0.0009	0.0320
500	0.3087	11.4200	645	0.3320	12.2818	790	0.0005	0.0174
505	0.3519	13.0199	650	0.2975	11.0069	795	0.0009	0.0351
510	0.3914	14.4798	655	0.2653	9.8161	800	0.0052	0.1914
515	0.4259	15.7589	660	0.2378	8.7969			
520	0.4555	16.8535	665	0.2127	7.8706			

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

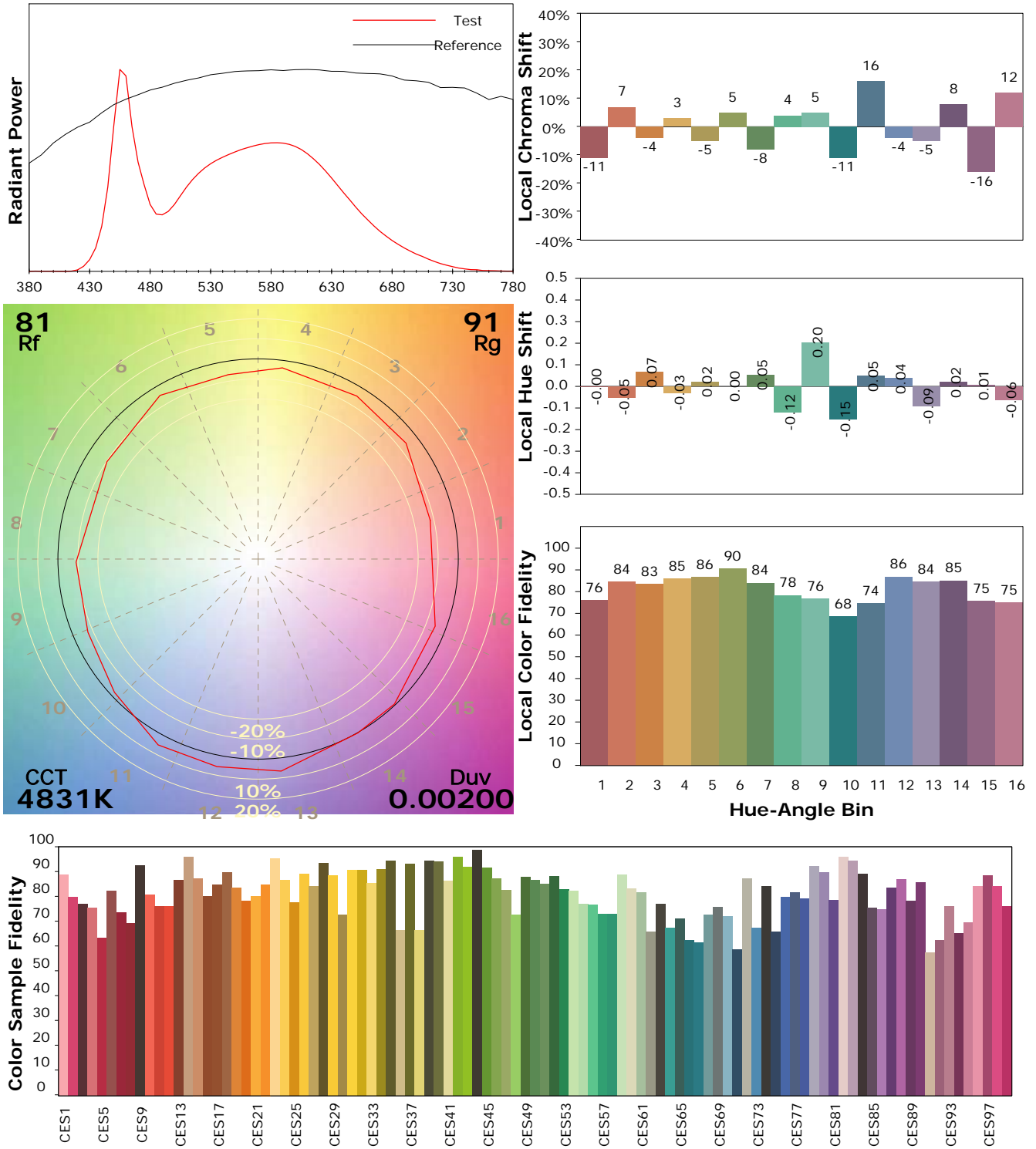
Test Device: Lisun LMS-9000B  
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 Inspector:

## IES TM-30-18 Color Rendition Report

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 Buyer: 6961

Product Type: LED-Röhre SCE  
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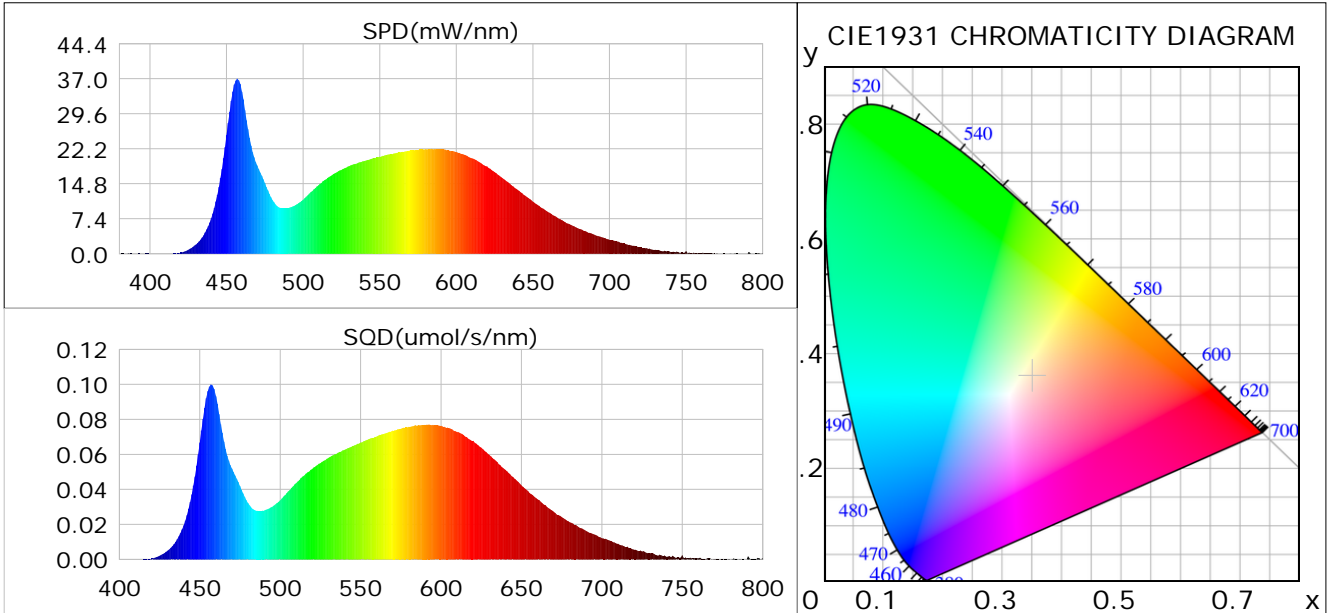
Condition: Tx: 19.9°C, Ti: 0.0°C, R.H.: 60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-01-06 11:40:08  
 Inspector:

## Plant optical param data

### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3506$   $y=0.3600$   $u(u')=0.2119$   $v=0.3263$   $v'=0.4895$   
 CCT:  $T_c=4831K$  ( $duv=0.00200$ ) Color Ratio:  $R=0.162$   $G=0.789$   $B=0.049$   
 Peak Wavelength: 457.0nm Half Bandwidth: 23.0nm  
 Dominant Wavelength: 572.8nm Color Purity: 0.132  
 CRI:  $R_a=83.5$



### Plant Optical Param

$ \mu_v(lm)$ : 1391.40	$Q_v(lm.s)$ : 1391.40
$ \mu_e, \dot{E}(W/nm)$ : 4.31	$Q_e(J)$ : 4.31
$ \mu_e(W)$ : 4.25	$ \mu_{fr}(W)$ : 0.07
$ \zeta_e$ : 0.46	$ \zeta_{fr}$ : 0.01
PPE(umol/s/w): 2.14	Kfr: 0.04
Erb_Ratio: 1.01	PPF(umol/s): 19.60
PFuv(360-400)(umol/s): 0.00	PPF(400-500)(umol/s): 4.45
PPF(500-600)(umol/s): 9.01	PPF(600-700)(umol/s): 6.14
PPfr(700-800)(umol/s): 0.40	PPF.t(umol): 19.60
$ \mu_{ch-A.t}(J)$ : 0.32	$ \mu_{ch-A}(W)$ : 0.32
$ \mu_{ch-B.t}(J)$ : 0.23	$ \mu_{ch-B}(W)$ : 0.23
$ \mu_b.t(J)$ : 1.15	$ \mu_b(W)$ : 1.15
$ \mu_y.t(J)$ : 1.96	$ \mu_y(W)$ : 1.96
$ \mu_r.t(J)$ : 1.18	$ \mu_r(W)$ : 1.18

### Electric Parameters

Voltage: 231.20V	Current: 0.0390A	Power: 9.14W
Power Factor: 0.9000	Frequency: 49.99Hz	

Condition:  $T_x=19.9^\circ C$ ,  $T_i=0.0^\circ C$ , R.H.: 60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-01-06 11:40:08  
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