

## Lightsource Test Report

### Product Information

Product Category: LED-Röhre  
 Product Spec: LEDtube-090-8Meat-P-15WM  
 Manufacturer: METOLIGHT  
 Buyer: 7116

Product Type: LED-Röhre-Spezial  
 Product Number: 1  
 Submitted Unit: 103863

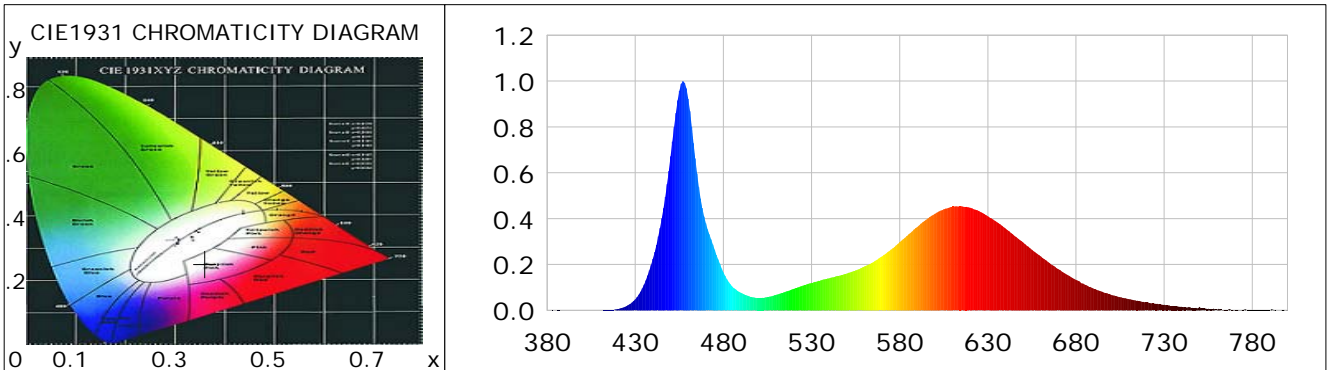
### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3602$   $y=0.2508$   $u(u')=0.2724$   $v=0.2845$   $v'=0.4268$   
 CCT:  $T_c=3111K$  ( $duv=-0.06667$ ) Color Ratio:  $R=0.306$   $G=0.628$   $B=0.066$   
 Peak Wavelength: 457.1nm Half Bandwidth: 19.6nm  
 Dominant Wavelength: 0.0nm Color Purity: 0.000  
 CRI:  $R_a=64.9$ ,  $avgR(1\sim14)=61.1$ ,  $avgR(1\sim15)=61.9$  TM30:  $R_f=76$ ,  $R_g=107$   
 GAI:  $GAI\_BB\_8=203.1$ ,  $GAI\_BB\_15=185.3$ ,  $GAI\_EES=122.7$   

R1 =81	R2 =62	R3 =55	R4 =75	R5 =76	R6 =41	R7 =54	R8 =75
R9 =85	R10=29	R11=70	R12=0	R13=71	R14=80	R15=73	

Color Quality Scale:  $Q_a=68.6$ ,  $Q_f=60.4$ ,  $Q_p=87.6$ ,  $Q_g=112.6$   

Q1 =93	Q2 =91	Q3 =55	Q4 =50	Q5 =67	Q6 =81	Q7 =81	Q8 =84
Q9 =89	Q10=73	Q11=60	Q12=52	Q13=53	Q14=73	Q15=85	



### Photometric Parameters

Luminous Flux: 1132.2 lm	Efficiency: 77.07 lm/W	Radiant Power: 4.916 W
Total mains efficacy: 90.64 lm/W	Energy Efficiency Class: F (EU 2019/2015)	
Pupil Flux: 1959.83 Plm	Pupil Lumens Per Watt: 133.41 Plm/W	Pupil Factor (Kp): 1.731
Cirtopic Flux: 4914.53 lm		

### Electric Parameters

Voltage: 230.60V	Current: 0.0670A	Power: 14.69W
Power Factor: 0.9360	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: 43554 (2526)	CCD Integration Time: 100.01 ms

Condition:  $T_x=21.8^\circ C$ ,  $T_i=0.0^\circ C$ , R.H.: 60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-01-13 14:26:50  
 Inspector:

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WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0006	0.0380	525	0.1079	7.1118	670	0.1799	11.8563
385	0.0006	0.0410	530	0.1198	7.8954	675	0.1552	10.2313
390	0.0003	0.0177	535	0.1303	8.5904	680	0.1332	8.7816
395	0.0004	0.0295	540	0.1402	9.2409	685	0.1120	7.3844
400	0.0002	0.0154	545	0.1503	9.9053	690	0.0944	6.2251
405	0.0003	0.0213	550	0.1612	10.6282	695	0.0806	5.3157
410	0.0005	0.0319	555	0.1744	11.4947	700	0.0675	4.4513
415	0.0016	0.1022	560	0.1914	12.6134	705	0.0575	3.7930
420	0.0060	0.3926	565	0.2108	13.8962	710	0.0491	3.2341
425	0.0186	1.2278	570	0.2358	15.5464	715	0.0422	2.7812
430	0.0479	3.1554	575	0.2650	17.4653	720	0.0346	2.2778
435	0.1123	7.4009	580	0.2982	19.6543	725	0.0291	1.9158
440	0.2245	14.7999	585	0.3311	21.8251	730	0.0246	1.6247
445	0.4019	26.4929	590	0.3644	24.0178	735	0.0195	1.2858
450	0.6719	44.2933	595	0.3953	26.0570	740	0.0159	1.0479
455	0.9573	63.1056	600	0.4216	27.7934	745	0.0123	0.8134
460	0.9231	60.8466	605	0.4410	29.0688	750	0.0147	0.9716
465	0.5970	39.3561	610	0.4525	29.8286	755	0.0071	0.4683
470	0.3798	25.0339	615	0.4541	29.9365	760	0.0041	0.2699
475	0.2647	17.4486	620	0.4481	29.5406	765	0.0023	0.1530
480	0.1658	10.9324	625	0.4325	28.5072	770	0.0017	0.1118
485	0.1043	6.8760	630	0.4099	27.0171	775	0.0026	0.1682
490	0.0766	5.0495	635	0.3856	25.4186	780	0.0017	0.1091
495	0.0606	3.9957	640	0.3572	23.5480	785	0.0025	0.1666
500	0.0536	3.5321	645	0.3258	21.4738	790	0.0008	0.0542
505	0.0579	3.8194	650	0.2963	19.5339	795	0.0012	0.0802
510	0.0678	4.4693	655	0.2644	17.4318	800	0.0036	0.2406
515	0.0803	5.2960	660	0.2359	15.5473			
520	0.0942	6.2071	665	0.2062	13.5903			

Condition: Tx:21.8'C, Ti:0.0'C, R.H.:60%  
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 Operator: CRE

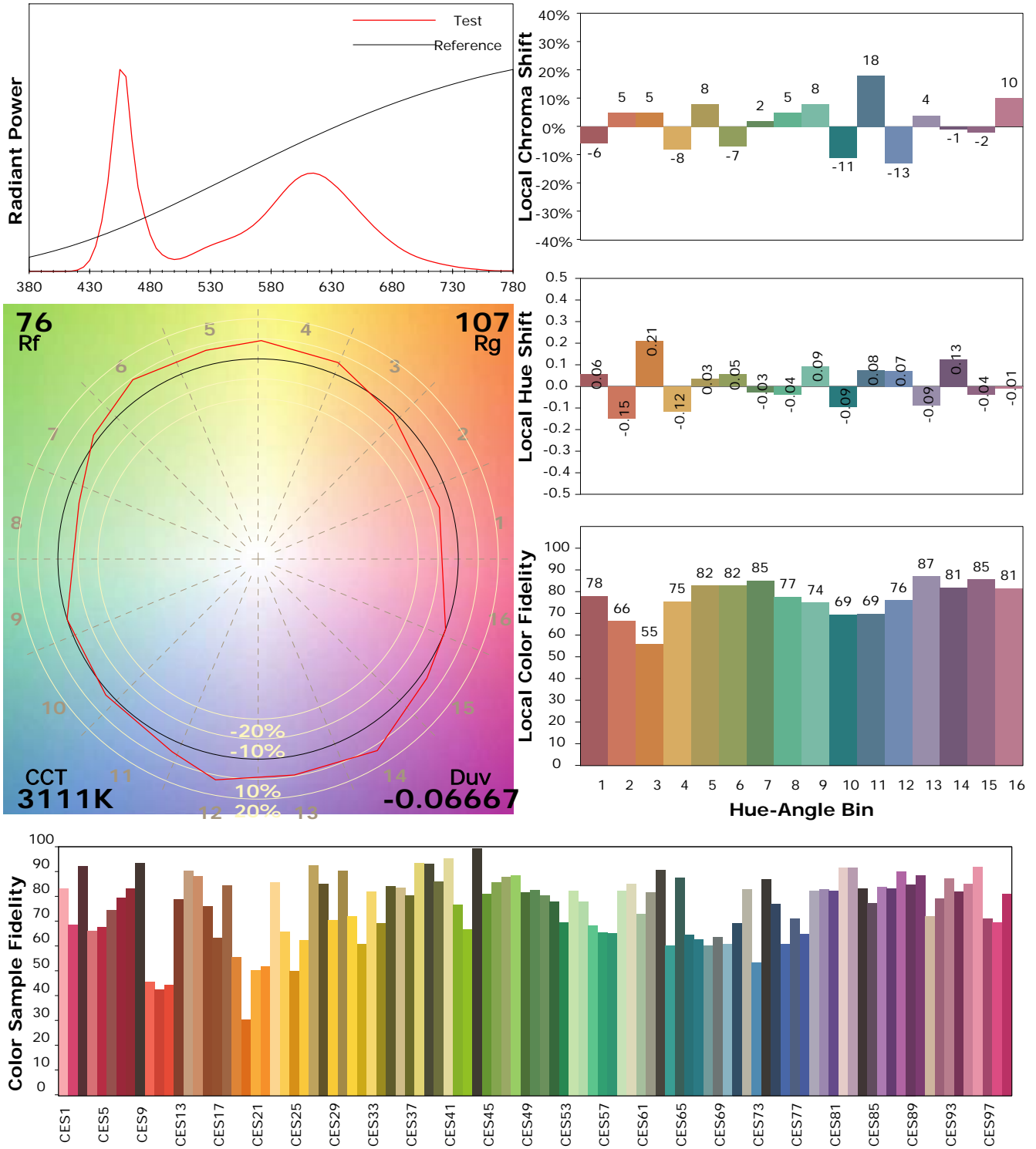
Test Device: Lisun LMS-9000B  
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 Inspector:

## IES TM-30-18 Color Rendition Report

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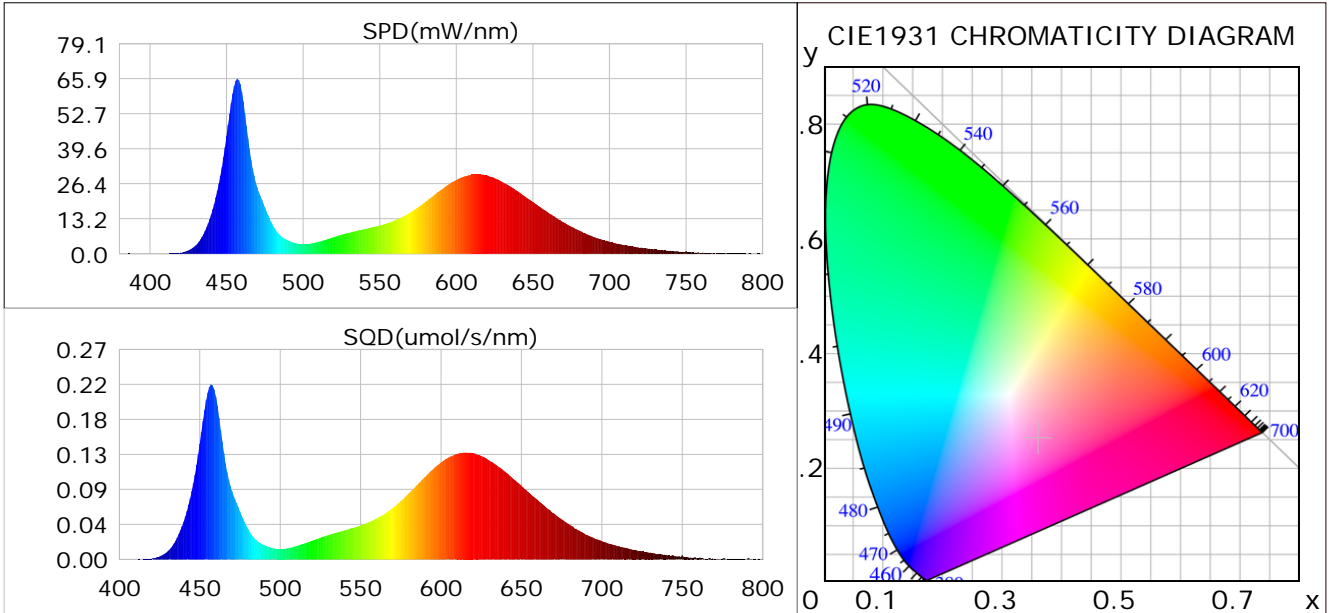
Condition: Tx:21.8°C, Ti:0.0°C, R.H.:60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-01-13 14:26:50  
 Inspector:

## Plant optical param data

### CIE Colorimetric Parameters

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 Peak Wavelength: 457.1nm Half Bandwidth: 19.6nm  
 Dominant Wavelength: 0.0nm Color Purity: 0.000  
 CRI:  $R_a=64.9$



### Plant Optical Param

$ \mu_v(lm): 1132.22$	$Q_v(lm.s): 1132.22$
$ \mu_e,  E(W/nm): 4.92$	$Q_e(J): 4.92$
$ \mu_e(W): 4.80$	$ \mu_{fr}(W): 0.12$
$ \zeta_e: 0.33$	$ \zeta_{fr}: 0.01$
$PPE(umol/s/w): 1.52$	$K_{fr}: 0.05$
$Erb\_Ratio: 1.12$	$PPF(umol/s): 22.35$
$PF_{uv}(360-400)(umol/s): 0.00$	$PPF(400-500)(umol/s): 6.38$
$PPF(500-600)(umol/s): 6.00$	$PPF(600-700)(umol/s): 9.96$
$PPF_r(700-800)(umol/s): 0.69$	$PPF.t(umol): 22.35$
$ \mu_{ch-A.t}(J): 0.47$	$ \mu_{ch-A}(W): 0.47$
$ \mu_{ch-B.t}(J): 0.34$	$ \mu_{ch-B}(W): 0.34$
$ \mu_b.t(J): 1.66$	$ \mu_b(W): 1.66$
$ \mu_y.t(J): 1.27$	$ \mu_y(W): 1.27$
$ \mu_r.t(J): 1.90$	$ \mu_r(W): 1.90$

### Electric Parameters

Voltage: 230.60V	Current: 0.0670A	Power: 14.69W
Power Factor: 0.9360	Frequency: 49.99Hz	

Condition:  $T_x: 21.8^\circ C$ ,  $T_i: 0.0^\circ C$ , R.H.: 60%  
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