

## Lightsource Test Report

### Product Information

Product Category: LED-Röhre  
 Product Spec: LEDtube-150-8NWM-24W-TRF-RM  
 Manufacturer: METOLIGHT  
 Buyer: 6961

Product Type: LED-Röhre-TRF  
 Product Number: 1  
 Submitted Unit: 102344

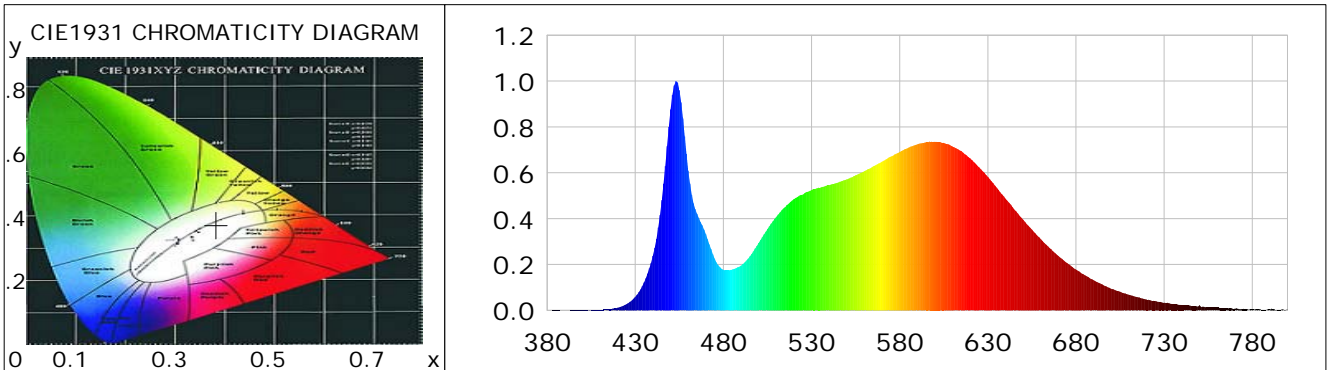
### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3831$   $y=0.3733$   $u(u')=0.2283$   $v=0.3336$   $v'=0.5005$   
 CCT:  $T_c=3901K$  ( $duv=-0.00239$ ) Color Ratio:  $R=0.192$   $G=0.774$   $B=0.034$   
 Peak Wavelength: 453.3nm Half Bandwidth: 16.8nm  
 Dominant Wavelength: 580.8nm Color Purity: 0.270  
 CRI:  $R_a=84.4$ ,  $avgR(1\sim14)=78.1$ ,  $avgR(1\sim15)=78.2$  TM30:  $R_f=83$ ,  $R_g=97$   
 GAI:  $GAI\_BB\_8=97.1$ ,  $GAI\_BB\_15=104.7$ ,  $GAI\_EES=75.0$   

R1 =84	R2 =91	R3 =94	R4 =83	R5 =83	R6 =86	R7 =86	R8 =67
R9 =18	R10=76	R11=82	R12=59	R13=86	R14=97	R15=79	

Color Quality Scale:  $Q_a=82.7$ ,  $Q_f=82.4$ ,  $Q_p=83.8$ ,  $Q_g=94.6$   

Q1 =83	Q2 =99	Q3 =77	Q4 =74	Q5 =81	Q6 =84	Q7 =86	Q8 =89
Q9 =97	Q10=88	Q11=85	Q12=84	Q13=84	Q14=75	Q15=78	



### Photometric Parameters

Luminous Flux: 3486.9 lm Efficiency: 135.84 lm/W Radiant Power: 10.644 W  
 Total mains efficacy: 159.74 lm/W Energy Efficiency Class: D (EU 2019/2015)  
 Pupil Flux: 5194.69 Plm Pupil Lumens Per Watt: 202.36 Plm/W Pupil Factor (Kp): 1.490  
 Circopic Flux: 10506.63 lm

### Electric Parameters

Voltage: 230.80V Current: 0.1180A Power: 25.67W  
 Power Factor: 0.9420 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: 48108 (2666) CCD Integration Time: 73.94 ms

Condition: Tx:23.4'C, Ti:0.0'C, R.H.:60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-02-17 14:35:50  
 Inspector:

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WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0007	0.0568	525	0.5049	42.1158	670	0.2375	19.8093
385	0.0009	0.0767	530	0.5245	43.7552	675	0.2060	17.1843
390	0.0004	0.0374	535	0.5354	44.6580	680	0.1782	14.8612
395	0.0008	0.0671	540	0.5462	45.5658	685	0.1529	12.7542
400	0.0012	0.1024	545	0.5573	46.4905	690	0.1317	10.9852
405	0.0012	0.1008	550	0.5717	47.6890	695	0.1130	9.4239
410	0.0022	0.1865	555	0.5887	49.1066	700	0.0937	7.8200
415	0.0054	0.4479	560	0.6075	50.6770	705	0.0815	6.8023
420	0.0117	0.9791	565	0.6284	52.4171	710	0.0681	5.6789
425	0.0268	2.2386	570	0.6486	54.1075	715	0.0575	4.7982
430	0.0589	4.9115	575	0.6716	56.0187	720	0.0474	3.9564
435	0.1216	10.1437	580	0.6913	57.6700	725	0.0405	3.3818
440	0.2380	19.8536	585	0.7099	59.2165	730	0.0340	2.8390
445	0.4803	40.0681	590	0.7242	60.4094	735	0.0275	2.2966
450	0.8764	73.1093	595	0.7331	61.1543	740	0.0235	1.9571
455	0.9601	80.0897	600	0.7357	61.3727	745	0.0202	1.6820
460	0.6099	50.8787	605	0.7308	60.9640	750	0.0218	1.8184
465	0.4212	35.1352	610	0.7145	59.6044	755	0.0139	1.1573
470	0.3327	27.7500	615	0.6947	57.9493	760	0.0123	1.0224
475	0.2261	18.8587	620	0.6626	55.2746	765	0.0094	0.7815
480	0.1767	14.7400	625	0.6240	52.0516	770	0.0074	0.6193
485	0.1784	14.8783	630	0.5818	48.5314	775	0.0064	0.5379
490	0.1951	16.2759	635	0.5349	44.6205	780	0.0048	0.4044
495	0.2354	19.6333	640	0.4870	40.6225	785	0.0040	0.3324
500	0.2941	24.5354	645	0.4403	36.7300	790	0.0039	0.3240
505	0.3551	29.6237	650	0.3953	32.9785	795	0.0018	0.1507
510	0.4080	34.0319	655	0.3524	29.4000	800	0.0042	0.3511
515	0.4507	37.5937	660	0.3111	25.9542			
520	0.4853	40.4856	665	0.2717	22.6649			

Condition: Tx:23.4'C, Ti:0.0'C, R.H.:60%  
 Test Lab:  
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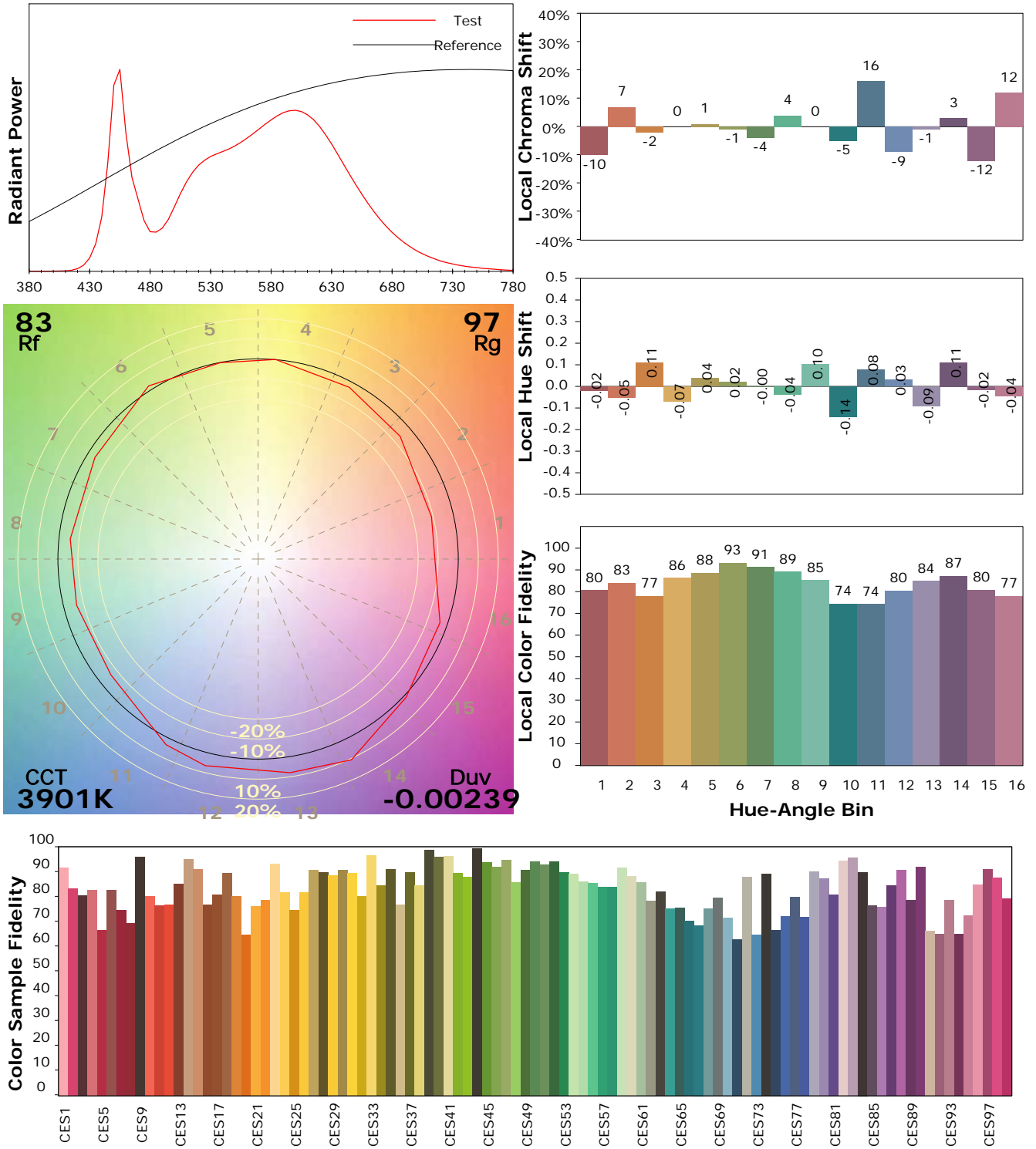
Test Device: Lisun LMS-9000B  
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## IES TM-30-18 Color Rendition Report

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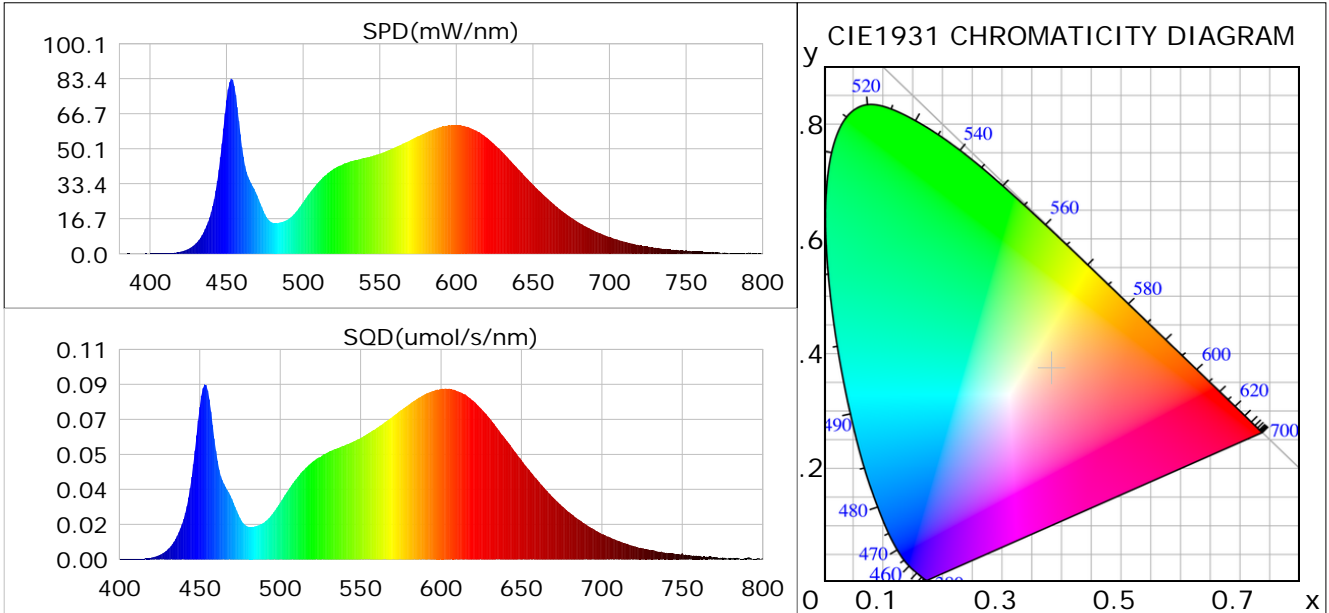
Condition: Tx:23.4°C, Ti:0.0°C, R.H.:60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-02-17 14:35:50  
 Inspector:

## Plant optical param data

### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3831$   $y=0.3733$   $u(u')=0.2283$   $v=0.3336$   $v'=0.5005$   
 CCT:  $T_c=3901K$  ( $duv=-0.00239$ ) Color Ratio:  $R=0.192$   $G=0.774$   $B=0.034$   
 Peak Wavelength: 453.3nm Half Bandwidth: 16.8nm  
 Dominant Wavelength: 580.8nm Color Purity: 0.270  
 CRI:  $R_a=84.4$



### Plant Optical Param

$ \mu_v(lm): 3486.90$	$Q_v(lm.s): 3486.90$
$ \mu_e, \dot{E}(W/nm): 10.64$	$Q_e(J): 10.64$
$ \mu_e(W): 10.43$	$ \mu_{fr}(W): 0.23$
$ \zeta_e: 0.41$	$ \zeta_{fr}: 0.01$
$PPE(\mu mol/s/w): 1.91$	$K_{fr}: 0.05$
$Erb\_Ratio: 1.53$	$PPF(\mu mol/s): 48.98$
$PF_{uv}(360-400)(\mu mol/s): 0.00$	$PPF(400-500)(\mu mol/s): 8.57$
$PPF(500-600)(\mu mol/s): 22.31$	$PPF(600-700)(\mu mol/s): 18.10$
$PPF_r(700-800)(\mu mol/s): 1.32$	$PPF.t(\mu mol): 48.98$
$ \mu_{ch-A.t}(J): 0.82$	$ \mu_{ch-A}(W): 0.82$
$ \mu_{ch-B.t}(J): 0.50$	$ \mu_{ch-B}(W): 0.50$
$ \mu_b.t(J): 2.22$	$ \mu_b(W): 2.22$
$ \mu_y.t(J): 4.83$	$ \mu_y(W): 4.83$
$ \mu_r.t(J): 3.47$	$ \mu_r(W): 3.47$

### Electric Parameters

Voltage: 230.80V	Current: 0.1180A	Power: 25.67W
Power Factor: 0.9420	Frequency: 49.99Hz	

Condition:  $T_x: 23.4^\circ C$ ,  $T_i: 0.0^\circ C$ , R.H.: 60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-02-17 14:35:50  
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