

## Lightsource Test Report

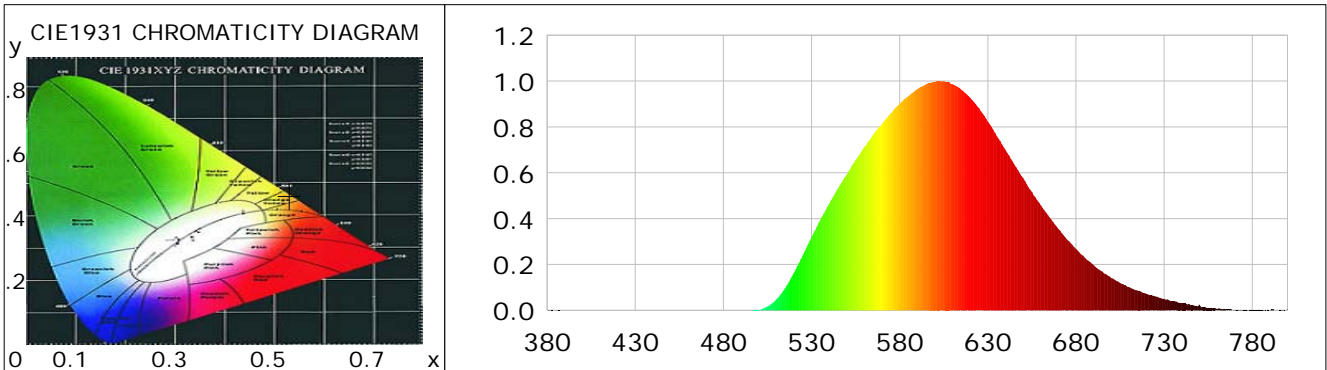
### Product Information

Product Category: LED-Röhre  
 Product Spec: LEDtube-470-120-T8-23W  
 Manufacturer: METOLIGHT

Product Type: LED-Röhre-UVL  
 Product Number: 1  
 Submitted Unit: 103130

### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.5311$   $y=0.4645$   $u(u')=0.2828$   $v=0.3710$   $v'=0.5565$   
 CCT:  $T_c=2276K$  ( $duv=0.01461$ ) Color Ratio:  $R=0.256$   $G=0.744$   $B=0.000$   
 Peak Wavelength: 601.3nm Half Bandwidth: 113.6nm  
 Dominant Wavelength: 583.2nm Color Purity: 0.989  
 CRI:  $R_a=53.0$ ,  $avgR(1\sim14)=42.9$ ,  $avgR(1\sim15)=43.2$  TM30:  $R_f=19$ ,  $R_g=10$   
 GAI:  $GAI\_BB\_8=1.0$ ,  $GAI\_BB\_15=1.1$ ,  $GAI\_EES=0.4$   
 R1 =54 R2 =65 R3 =65 R4 =42 R5 =48 R6 =49 R7 =67 R8 =34  
 R9 =0 R10=22 R11=21 R12=0 R13=54 R14=80 R15=47  
 Color Quality Scale:  $Q_a=0.4$ ,  $Q_f=0.8$ ,  $Q_p=0.0$ ,  $Q_g=5.7$   
 Q1 =46 Q2 =7 Q3 =0 Q4 =3 Q5 =23 Q6 =50 Q7 =35 Q8 =2  
 Q9 =0 Q10=0 Q11=0 Q12=0 Q13=0 Q14=2 Q15=50



### Photometric Parameters

Luminous Flux: 2310.3 lm Efficiency: 102.63 lm/W Radiant Power: 6.208 W  
 Total mains efficacy: 111.77 lm/W Energy Efficiency Class: E (EU 2019/2015)  
 Pupil Flux: 1667.04 Plm Pupil Lumens Per Watt: 74.06 Plm/W Pupil Factor (Kp): 0.722  
 Circopic Flux: 1747.05 lm

### Electric Parameters

Voltage: 230.70V Current: 0.0976A Power: 22.51W  
 Power Factor: 0.9320 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: 46715 (2466) CCD Integration Time: 207.04 ms

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

Test Device: Lisun LMS-9000B  
 Test Time: 2021-02-25 14:07:27  
 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	0.0324	525	0.2401	12.7367	670	0.3555	18.8600
385	0.0013	0.0663	530	0.3179	16.8633	675	0.3085	16.3643
390	0.0002	0.0118	535	0.3941	20.9083	680	0.2685	14.2466
395	0.0002	0.0081	540	0.4645	24.6432	685	0.2295	12.1731
400	0.0002	0.0080	545	0.5317	28.2084	690	0.1975	10.4759
405	0.0000	0.0014	550	0.5926	31.4386	695	0.1687	8.9518
410	0.0001	0.0070	555	0.6557	34.7872	700	0.1407	7.4648
415	0.0004	0.0229	560	0.7132	37.8334	705	0.1190	6.3137
420	0.0006	0.0333	565	0.7675	40.7162	710	0.1012	5.3713
425	0.0001	0.0031	570	0.8139	43.1764	715	0.0861	4.5662
430	0.0002	0.0109	575	0.8595	45.5963	720	0.0719	3.8137
435	0.0005	0.0271	580	0.9009	47.7939	725	0.0612	3.2493
440	0.0003	0.0168	585	0.9346	49.5803	730	0.0503	2.6659
445	0.0001	0.0073	590	0.9649	51.1889	735	0.0395	2.0951
450	0.0004	0.0225	595	0.9866	52.3410	740	0.0314	1.6681
455	0.0004	0.0217	600	0.9968	52.8816	745	0.0230	1.2204
460	0.0004	0.0224	605	0.9998	53.0412	750	0.0245	1.3005
465	0.0000	0.0011	610	0.9861	52.3110	755	0.0111	0.5891
470	0.0002	0.0106	615	0.9620	51.0363	760	0.0063	0.3322
475	0.0003	0.0162	620	0.9274	49.1996	765	0.0048	0.2528
480	0.0001	0.0051	625	0.8811	46.7455	770	0.0028	0.1469
485	0.0000	0.0006	630	0.8221	43.6125	775	0.0018	0.0960
490	0.0002	0.0131	635	0.7604	40.3423	780	0.0009	0.0475
495	0.0005	0.0241	640	0.6994	37.1022	785	0.0025	0.1308
500	0.0025	0.1326	645	0.6361	33.7437	790	0.0002	0.0084
505	0.0171	0.9070	650	0.5767	30.5968	795	0.0009	0.0462
510	0.0471	2.4961	655	0.5165	27.4020	800	0.0052	0.2736
515	0.0969	5.1421	660	0.4589	24.3476			
520	0.1630	8.6495	665	0.4053	21.5039			

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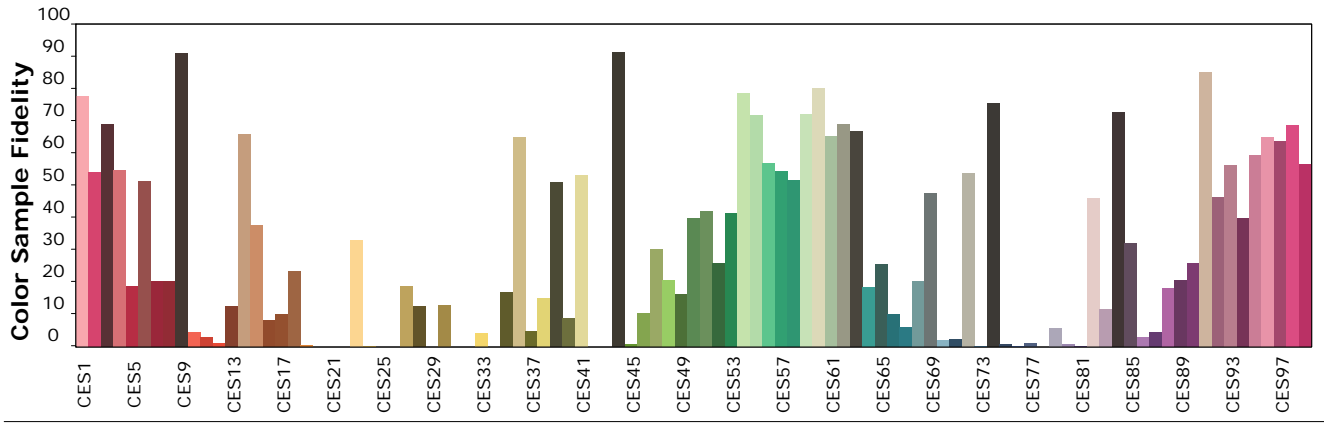
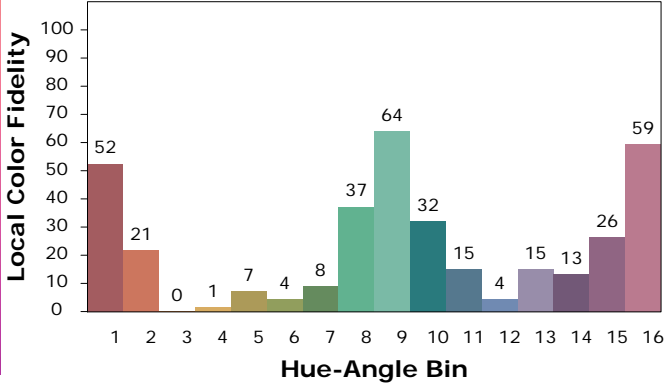
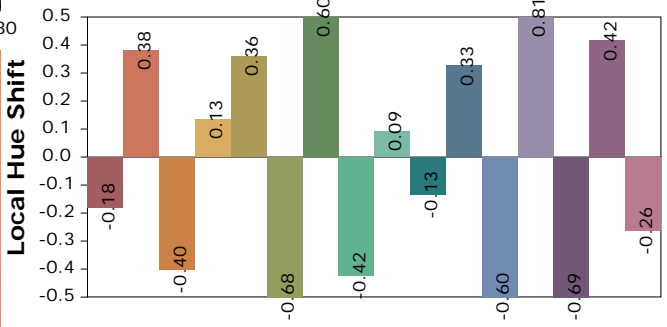
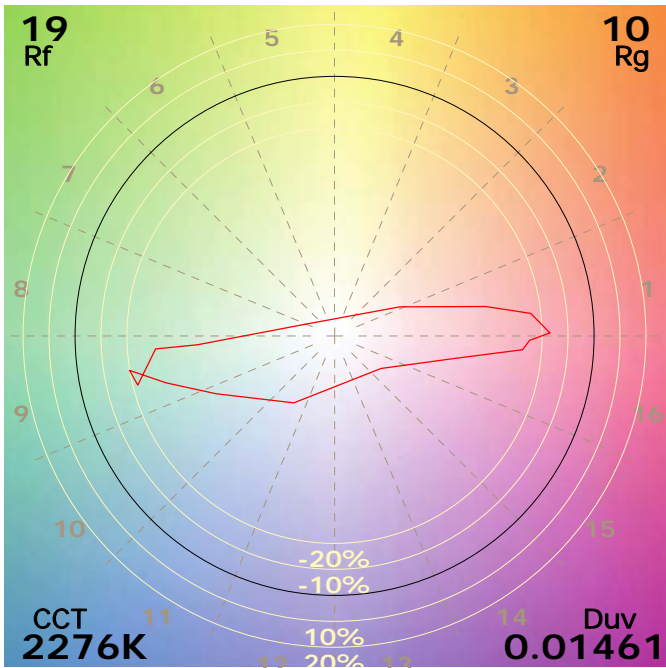
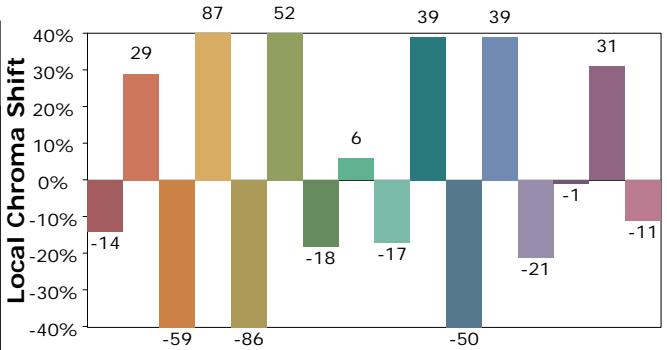
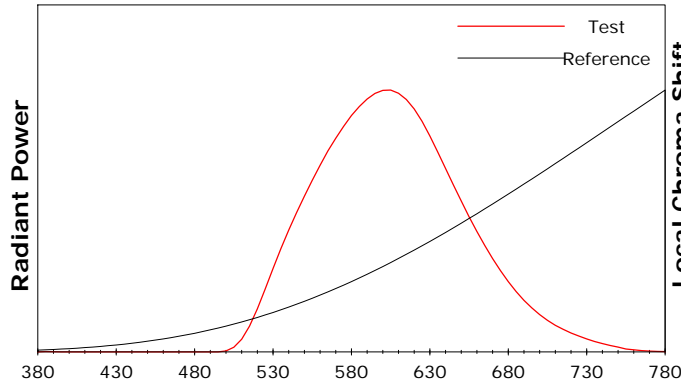
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## IES TM-30-18 Color Rendition Report

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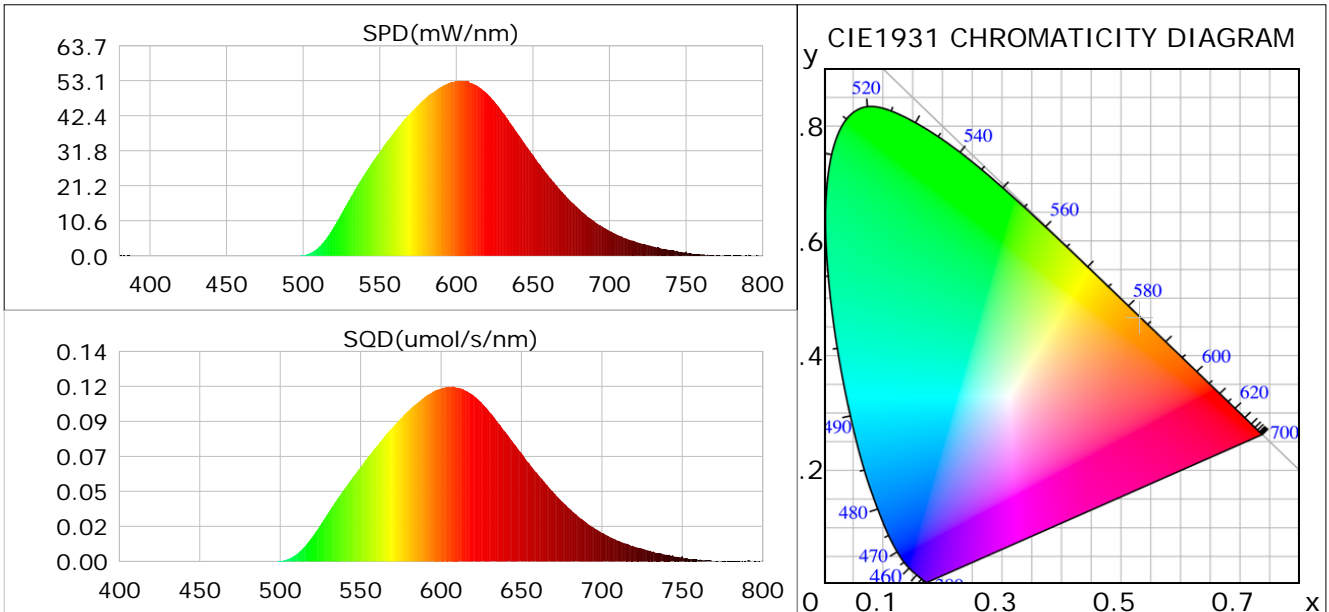
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## Plant optical param data

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 Dominant Wavelength: 583.2nm Color Purity: 0.989  
 CRI:  $R_a=53.0$



### Plant Optical Param

$ \mu_v(lm): 2310.30$	$Q_v(lm.s): 2310.30$
$ \mu_e, \dot{E}(W/nm): 6.21$	$Q_e(J): 6.21$
$ \mu_e(W): 6.02$	$ \mu_{fr}(W): 0.19$
$ \dot{C}_e: 0.27$	$ \dot{C}_{fr}: 0.01$
$PPE(umol/s/w): 1.35$	$K_{fr}: 0.05$
$Erb\_Ratio: 1767.33$	$PPF(umol/s): 30.35$
$PF_{uv}(360-400)(umol/s): 0.00$	$PPF(400-500)(umol/s): 0.01$
$PPF(500-600)(umol/s): 13.92$	$PPF(600-700)(umol/s): 16.42$
$PPF_{fr}(700-800)(umol/s): 1.12$	$PPF.t(umol): 30.35$
$ \mu_{ch-A.t}(J): 0.46$	$ \mu_{ch-A}(W): 0.46$
$ \mu_{ch-B.t}(J): 0.16$	$ \mu_{ch-B}(W): 0.16$
$ \mu_b.t(J): 0.00$	$ \mu_b(W): 0.00$
$ \mu_y.t(J): 2.93$	$ \mu_y(W): 2.93$
$ \mu_r.t(J): 3.14$	$ \mu_r(W): 3.14$

### Electric Parameters

Voltage: 230.70V	Current: 0.0976A	Power: 22.51W
Power Factor: 0.9320	Frequency: 49.99Hz	

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