

## Lightsource Test Report

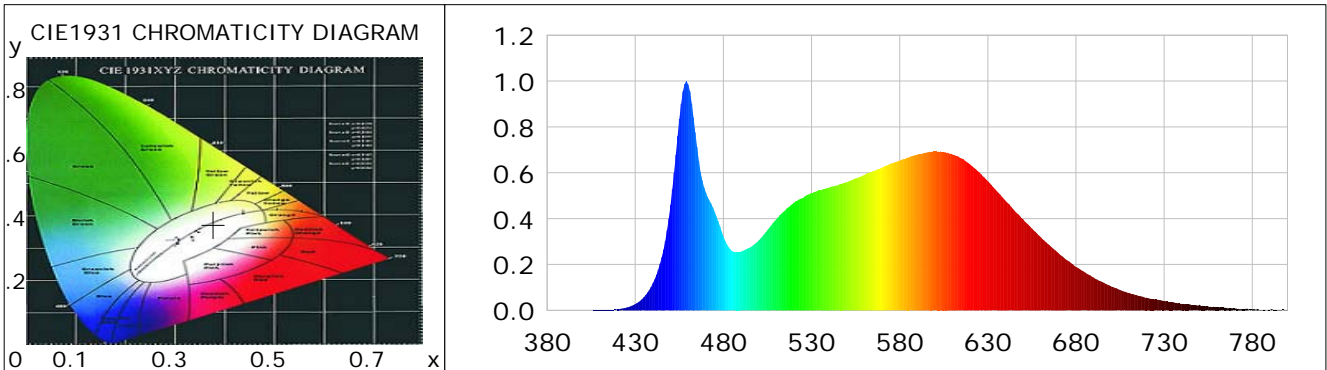
### Product Information

Product Category: LED-Röhre  
 Product Spec: Ledtube-085-5NWM-HO-24W-TRF  
 Manufacturer: METOLIGHT  
 Buyer: 3283

Product Type: LED-Röhre-TRF  
 Product Number: 1  
 Submitted Unit: 103504

### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3771$   $y=0.3740$   $u(u')=0.2240$   $v=0.3332$   $v'=0.4998$   
 CCT:  $T_c=4073K$  ( $duv=-0.00032$ ) Color Ratio:  $R=0.189$   $G=0.767$   $B=0.044$   
 Peak Wavelength: 459.0nm Half Bandwidth: 20.2nm  
 Dominant Wavelength: 579.0nm Color Purity: 0.254  
 CRI:  $R_a=86.4$ ,  $avgR(1\sim14)=81.3$ ,  $avgR(1\sim15)=81.4$  TM30:  $R_f=83$ ,  $R_g=92$   
 GAI:  $GAI\_BB\_8=91.6$ ,  $GAI\_BB\_15=100.1$ ,  $GAI\_EES=73.3$   
 R1 =87 R2 =96 R3 =96 R4 =82 R5 =85 R6 =91 R7 =85 R8 =70  
 R9 =30 R10=87 R11=81 R12=60 R13=90 R14=99 R15=82  
 Color Quality Scale:  $Q_a=84.4$ ,  $Q_f=84.7$ ,  $Q_p=83.2$ ,  $Q_g=91.8$   
 Q1 =81 Q2 =95 Q3 =84 Q4 =76 Q5 =78 Q6 =80 Q7 =86 Q8 =90  
 Q9 =98 Q10=94 Q11=90 Q12=88 Q13=88 Q14=79 Q15=81



### Photometric Parameters

Luminous Flux: 2212.0 lm Efficiency: 89.19 lm/W Radiant Power: 6.909 W  
 Total mains efficacy: 97.13 lm/W Energy Efficiency Class: F (EU 2019/2015)  
 Pupil Flux: 3491.67 Plm Pupil Lumens Per Watt: 140.79 Plm/W Pupil Factor (Kp): 1.579  
 Circopic Flux: 7409.57 lm

### Electric Parameters

Voltage: 229.90V Current: 0.1380A Power: 24.80W  
 Power Factor: 0.9180 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: 45577 (2370) CCD Integration Time: 80.00 ms

Condition: Tx:19.8'C, Ti:0.0'C, R.H.:60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-01-22 11:50:17  
 Inspector:

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WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0002	0.0102	525	0.4898	26.6269	670	0.2503	13.6068
385	0.0006	0.0346	530	0.5112	27.7912	675	0.2185	11.8773
390	0.0003	0.0138	535	0.5236	28.4611	680	0.1897	10.3139
395	0.0003	0.0167	540	0.5361	29.1399	685	0.1660	9.0243
400	0.0006	0.0302	545	0.5458	29.6698	690	0.1426	7.7505
405	0.0006	0.0314	550	0.5586	30.3644	695	0.1231	6.6898
410	0.0012	0.0678	555	0.5754	31.2802	700	0.1044	5.6773
415	0.0025	0.1332	560	0.5908	32.1138	705	0.0888	4.8273
420	0.0050	0.2726	565	0.6082	33.0645	710	0.0762	4.1419
425	0.0123	0.6687	570	0.6226	33.8422	715	0.0647	3.5144
430	0.0273	1.4854	575	0.6407	34.8278	720	0.0552	2.9981
435	0.0581	3.1578	580	0.6535	35.5254	725	0.0476	2.5864
440	0.1184	6.4338	585	0.6666	36.2342	730	0.0413	2.2437
445	0.2318	12.6022	590	0.6793	36.9263	735	0.0350	1.9016
450	0.4606	25.0403	595	0.6881	37.4071	740	0.0286	1.5553
455	0.8350	45.3919	600	0.6932	37.6815	745	0.0248	1.3483
460	0.9850	53.5457	605	0.6907	37.5477	750	0.0239	1.3012
465	0.7134	38.7791	610	0.6794	36.9311	755	0.0173	0.9411
470	0.5141	27.9477	615	0.6630	36.0384	760	0.0146	0.7910
475	0.4301	23.3804	620	0.6362	34.5831	765	0.0113	0.6139
480	0.3224	17.5247	625	0.6022	32.7381	770	0.0085	0.4646
485	0.2581	14.0290	630	0.5632	30.6129	775	0.0063	0.3439
490	0.2568	13.9588	635	0.5204	28.2870	780	0.0046	0.2519
495	0.2740	14.8965	640	0.4780	25.9839	785	0.0026	0.1433
500	0.3045	16.5513	645	0.4362	23.7103	790	0.0021	0.1165
505	0.3505	19.0533	650	0.3967	21.5669	795	0.0032	0.1714
510	0.3979	21.6294	655	0.3573	19.4213	800	0.0040	0.2175
515	0.4360	23.7010	660	0.3195	17.3700			
520	0.4694	25.5193	665	0.2836	15.4180			

Condition: Tx: 19.8°C, Ti: 0.0°C, R.H.: 60%  
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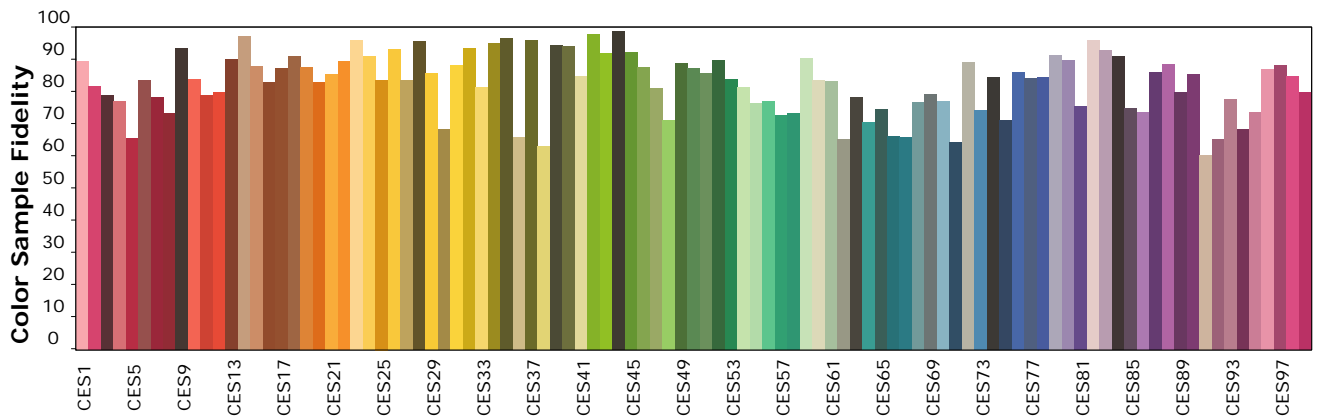
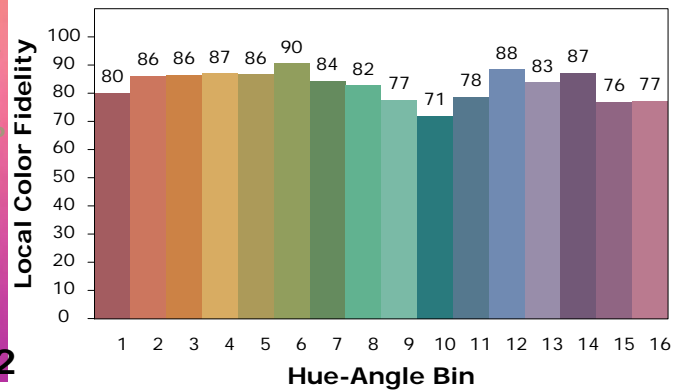
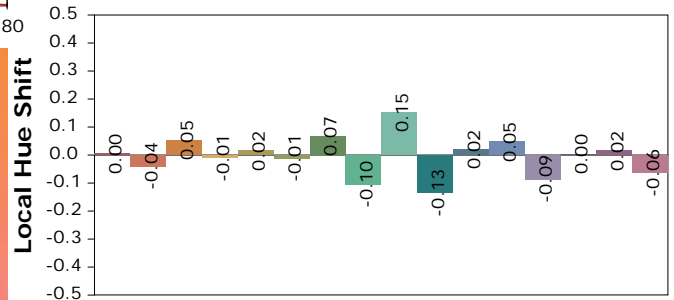
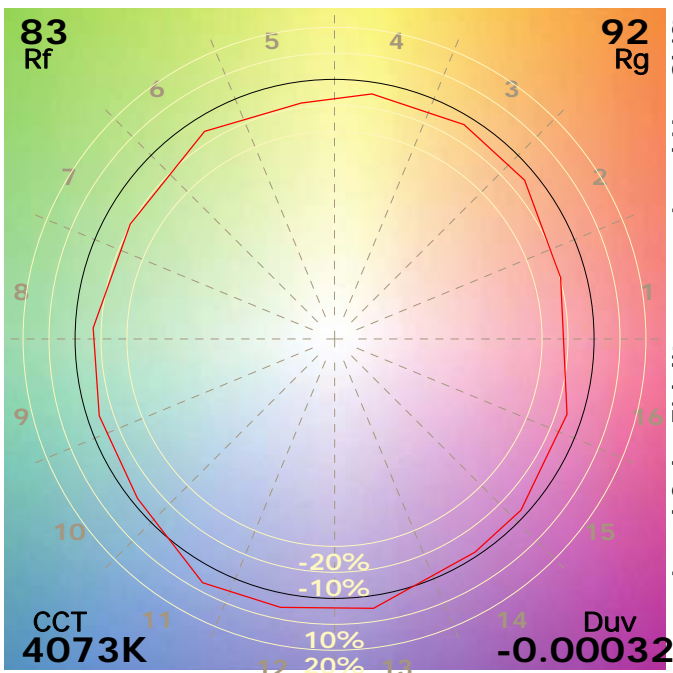
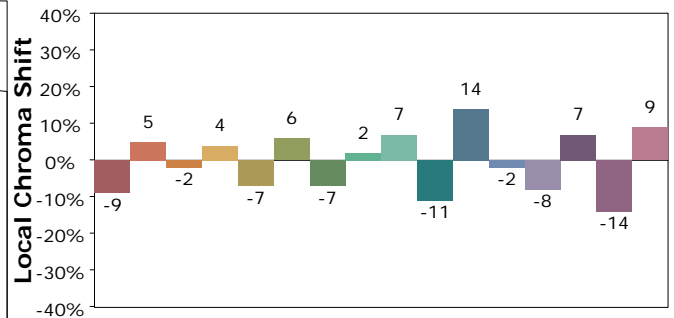
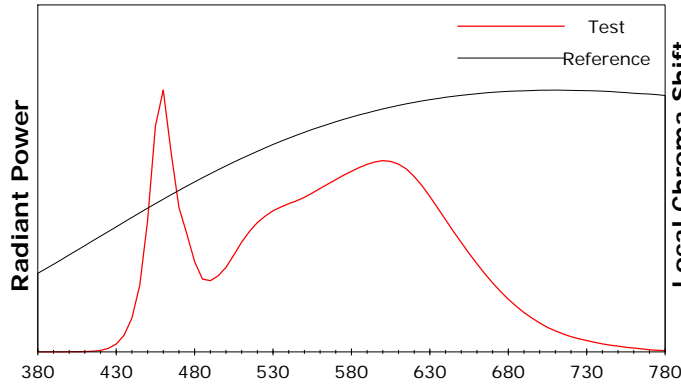
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 Inspector:

## IES TM-30-18 Color Rendition Report

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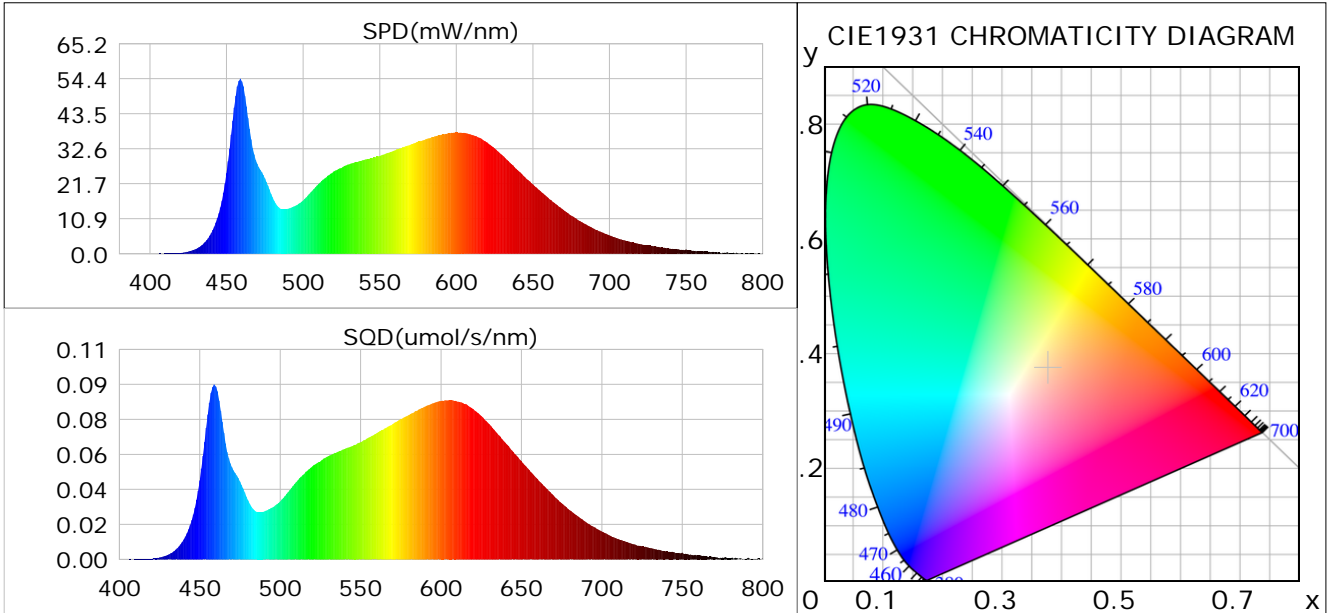
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## Plant optical param data

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 Peak Wavelength: 459.0nm Half Bandwidth: 20.2nm  
 Dominant Wavelength: 579.0nm Color Purity: 0.254  
 CRI:  $R_a=86.4$



### Plant Optical Param

$ \mu_v(lm): 2212.00$	$Q_v(lm.s): 2212.00$
$ \mu_e, \dot{E}(W/nm): 6.91$	$Q_e(J): 6.91$
$ \mu_e(W): 6.75$	$ \mu_{fr}(W): 0.17$
$ \zeta_e: 0.27$	$ \zeta_{fr}: 0.01$
$PPE(umol/s/w): 1.28$	$K_{fr}: 0.04$
$Erb\_Ratio: 1.42$	$PPF(umol/s): 31.67$
$PF_{uv}(360-400)(umol/s): 0.00$	$PPF(400-500)(umol/s): 6.02$
$PPF(500-600)(umol/s): 14.00$	$PPF(600-700)(umol/s): 11.65$
$PPF_r(700-800)(umol/s): 0.98$	$PPF.t(umol): 31.67$
$ \mu_{ch-A.t}(J): 0.50$	$ \mu_{ch-A}(W): 0.50$
$ \mu_{ch-B.t}(J): 0.34$	$ \mu_{ch-B}(W): 0.34$
$ \mu_b.t(J): 1.55$	$ \mu_b(W): 1.55$
$ \mu_y.t(J): 3.03$	$ \mu_y(W): 3.03$
$ \mu_r.t(J): 2.23$	$ \mu_r(W): 2.23$

### Electric Parameters

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Power Factor: 0.9180	Frequency: 49.99Hz	

Condition:  $T_x: 19.8^\circ C$ ,  $T_i: 0.0^\circ C$ , R.H.: 60%  
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