

## Lightsource Test Report

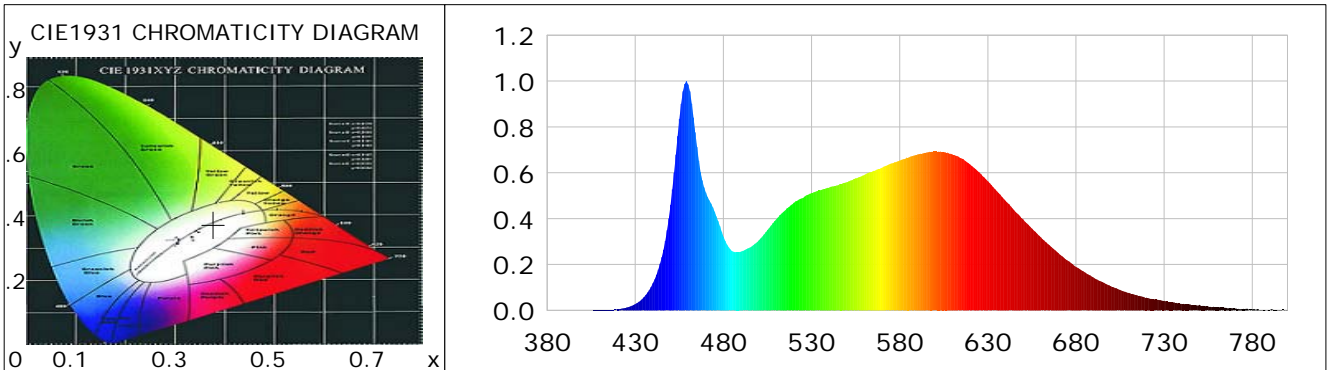
### Product Information

Product Category: LED-Röhre  
 Product Spec: Ledtube-115-5NWM-HO-30W-TRF  
 Manufacturer: METOLIGHT  
 Buyer: 3283

Product Type: LED-Röhre-TRF  
 Product Number: 1  
 Submitted Unit: 104505

### 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:  $R_a = 86.4$ ,  $avgR(1\sim 14) = 81.3$ ,  $avgR(1\sim 15) = 81.4$  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: 2483.8 lm Efficiency: 81.70 lm/W Radiant Power: 7.757 W  
 Total mains efficacy: 88.98 lm/W Energy Efficiency Class: F (EU 2019/2015)  
 Pupil Flux: 3920.71 Plm Pupil Lumens Per Watt: 128.97 Plm/W Pupil Factor (Kp): 1.579  
 Circopic Flux: 8320.02 lm

### Electric Parameters

Voltage: 229.81V Current: 0.1440A Power: 30.40W  
 Power Factor: 0.9130 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	0.0114	525	0.4898	29.8987	670	0.2503	15.2787
385	0.0006	0.0389	530	0.5112	31.2061	675	0.2185	13.3367
390	0.0003	0.0155	535	0.5236	31.9583	680	0.1897	11.5813
395	0.0003	0.0187	540	0.5361	32.7205	685	0.1660	10.1332
400	0.0006	0.0339	545	0.5458	33.3155	690	0.1426	8.7029
405	0.0006	0.0352	550	0.5586	34.0954	695	0.1231	7.5118
410	0.0012	0.0762	555	0.5754	35.1238	700	0.1044	6.3748
415	0.0025	0.1496	560	0.5908	36.0598	705	0.0888	5.4204
420	0.0050	0.3061	565	0.6082	37.1273	710	0.0762	4.6508
425	0.0123	0.7509	570	0.6226	38.0006	715	0.0647	3.9462
430	0.0273	1.6679	575	0.6407	39.1072	720	0.0552	3.3664
435	0.0581	3.5458	580	0.6535	39.8906	725	0.0476	2.9043
440	0.1184	7.2243	585	0.6666	40.6864	730	0.0413	2.5194
445	0.2318	14.1507	590	0.6793	41.4636	735	0.0350	2.1353
450	0.4606	28.1172	595	0.6881	42.0035	740	0.0286	1.7464
455	0.8350	50.9694	600	0.6932	42.3116	745	0.0248	1.5140
460	0.9850	60.1251	605	0.6907	42.1614	750	0.0239	1.4610
465	0.7134	43.5440	610	0.6794	41.4691	755	0.0173	1.0568
470	0.5141	31.3818	615	0.6630	40.4666	760	0.0146	0.8882
475	0.4301	26.2533	620	0.6362	38.8325	765	0.0113	0.6893
480	0.3224	19.6781	625	0.6022	36.7608	770	0.0085	0.5217
485	0.2581	15.7529	630	0.5632	34.3745	775	0.0063	0.3862
490	0.2568	15.6740	635	0.5204	31.7628	780	0.0046	0.2828
495	0.2740	16.7269	640	0.4780	29.1767	785	0.0026	0.1609
500	0.3045	18.5851	645	0.4362	26.6237	790	0.0021	0.1308
505	0.3505	21.3945	650	0.3967	24.2169	795	0.0032	0.1924
510	0.3979	24.2872	655	0.3573	21.8077	800	0.0040	0.2443
515	0.4360	26.6133	660	0.3195	19.5043			
520	0.4694	28.6550	665	0.2836	17.3124			

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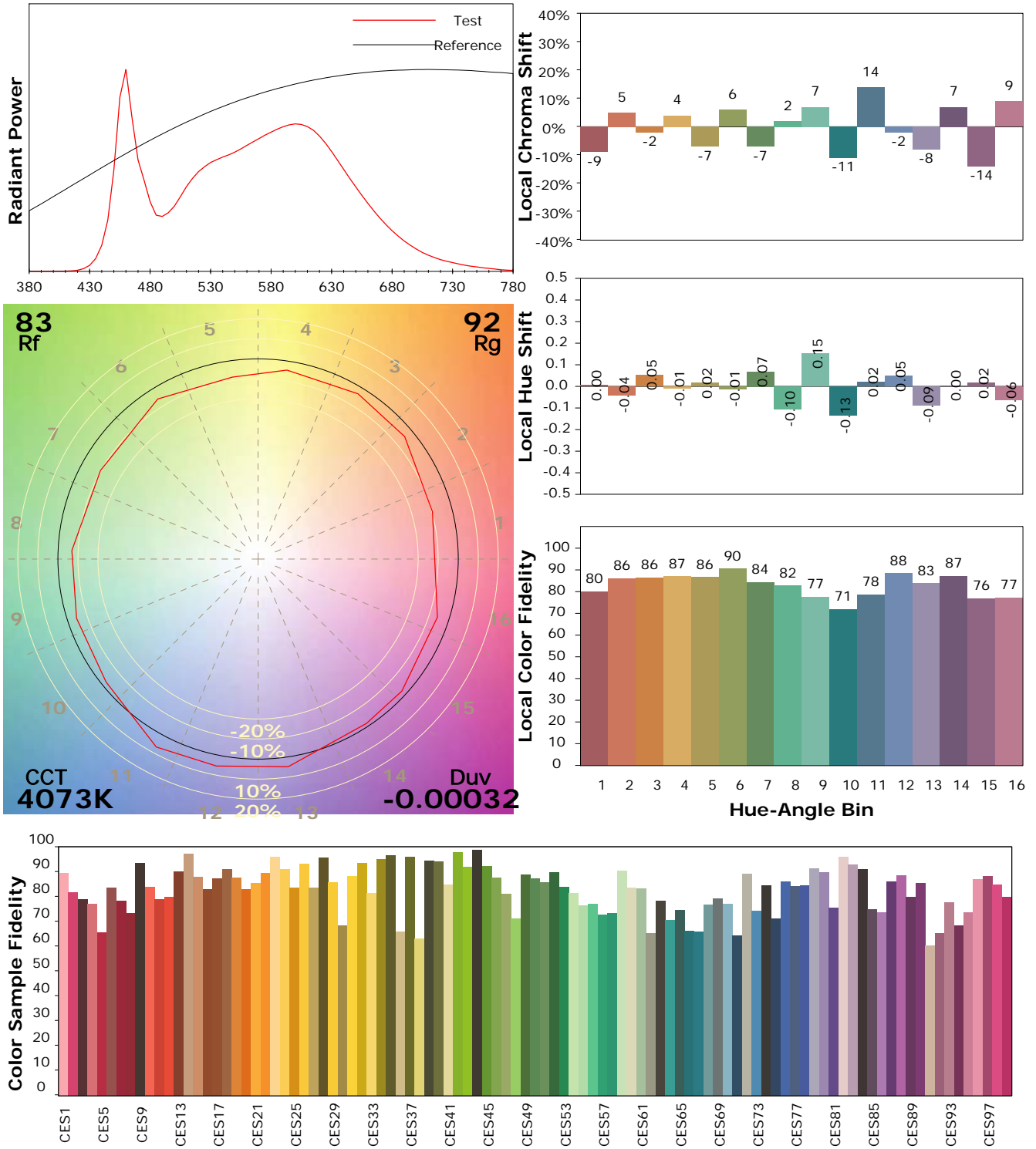
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## IES TM-30-18 Color Rendition Report

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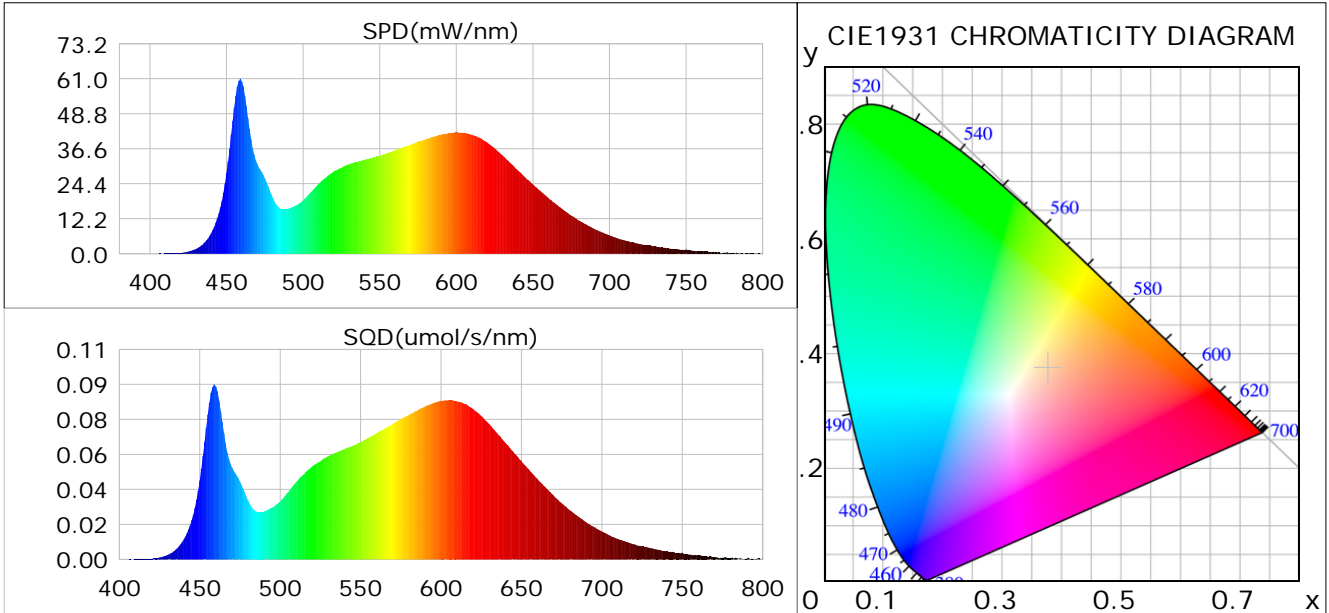
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## Plant optical param data

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 Dominant Wavelength: 579.0nm Color Purity: 0.254  
 CRI:  $R_a=86.4$



### Plant Optical Param

$ \mu_v(lm)$ : 2483.80	$Q_v(lm.s)$ : 2483.80
$ \mu_e, \dot{E}(W/nm)$ : 7.76	$Q_e(J)$ : 7.76
$ \mu_e(W)$ : 7.58	$ \mu_{fr}(W)$ : 0.19
$ \zeta_e$ : 0.25	$ \zeta_{fr}$ : 0.01
PPE(umol/s/w): 1.17	Kfr: 0.04
Erb_Ratio: 1.42	PPF(umol/s): 35.56
PFuv(360-400)(umol/s): 0.00	PPF(400-500)(umol/s): 6.76
PPF(500-600)(umol/s): 15.72	PPF(600-700)(umol/s): 13.08
PPfr(700-800)(umol/s): 1.10	PPF.t(umol): 35.56
$ \mu_{ch-A.t}(J)$ : 0.56	$ \mu_{ch-A}(W)$ : 0.56
$ \mu_{ch-B.t}(J)$ : 0.38	$ \mu_{ch-B}(W)$ : 0.38
$ \mu_b.t(J)$ : 1.74	$ \mu_b(W)$ : 1.74
$ \mu_y.t(J)$ : 3.40	$ \mu_y(W)$ : 3.40
$ \mu_r.t(J)$ : 2.50	$ \mu_r(W)$ : 2.50

### Electric Parameters

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Power Factor: 0.9130	Frequency: 49.99Hz	

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