

Lightsource Test Report

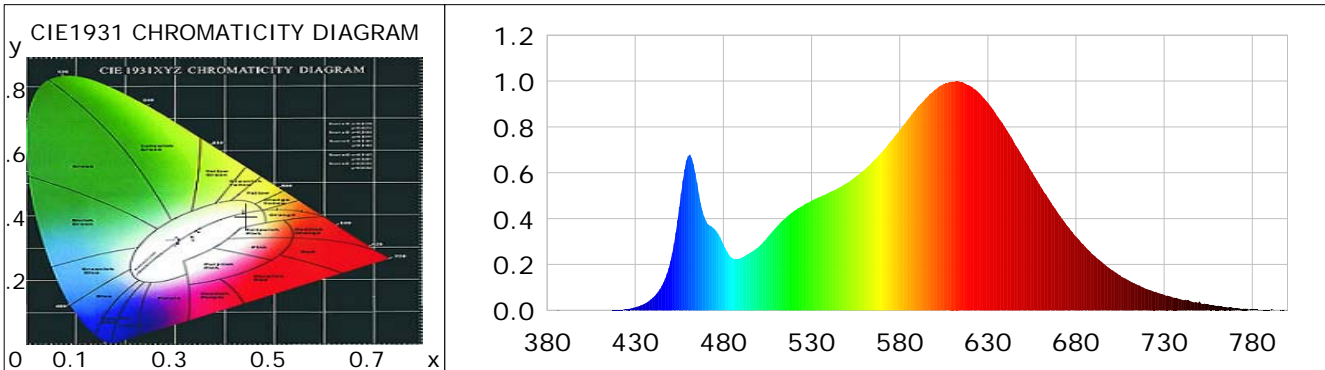
Product Information

Product Category: LED-Röhre
 Product Spec: LEDtube-060-8WWM-10W-SCE-24
 Manufacturer: METOLIGHT
 Buyer: 4624

Product Type: 12/24 Volt
 Product Number: 1
 Submitted Unit: 105315

CIE Colorimetric Parameters

Chromaticity coordinates: $x=0.4436$ $y=0.4002$ $u(u')=0.2566$ $v=0.3473$ $v'=0.5209$
 CCT: $T_c=2859K$ ($duv=-0.00236$) Color Ratio: $R=0.250$ $G=0.719$ $B=0.031$
 Peak Wavelength: 612.4nm Half Bandwidth: 127.4nm
 Dominant Wavelength: 584.3nm Color Purity: 0.533
 CRI: $R_a=87.2$, $avgR(1\sim14)=83.9$, $avgR(1\sim15)=83.8$ TM30: $R_f=85$, $R_g=94$
 GAI: $GAI_BB_8=99.6$, $GAI_BB_15=109.3$, $GAI_EES=53.2$
 R1 =89 R2 =98 R3 =93 R4 =85 R5 =89 R6 =95 R7 =82 R8 =67
 R9 =32 R10=94 R11=85 R12=76 R13=92 R14=97 R15=82
 Color Quality Scale: $Q_a=85.8$, $Q_f=87.4$, $Q_p=87.8$, $Q_g=92.2$
 Q1 =81 Q2 =93 Q3 =88 Q4 =82 Q5 =82 Q6 =84 Q7 =88 Q8 =89
 Q9 =95 Q10=94 Q11=91 Q12=88 Q13=87 Q14=80 Q15=80



Photometric Parameters

Luminous Flux: 1226.8 lm Efficiency: 117.28 lm/W Radiant Power: 3.918 W
 Total mains efficacy: 137.93 lm/W Energy Efficiency Class: D (EU 2019/2015)
 Pupil Flux: 1577.86 Plm Pupil Lumens Per Watt: 150.85 Plm/W Pupil Factor (Kp): 1.286
 Circopic Flux: 2994.39 lm

Electric Parameters

Voltage: 24.010V Current: 0.4360A Power: 10.46W
 Power Factor: 0.7310 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: 46409 (2406) CCD Integration Time: 191.55 ms

Condition: Tx:19.9'C, Ti:0.0'C, R.H.:60%
 Test Lab:
 Operator: CRE

Test Device: Lisun LMS-9000B
 Test Time: 2020-12-16 13:40:33
 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	0.0171	525	0.4560	12.0190	670	0.4223	11.1300
385	0.0004	0.0103	530	0.4786	12.6150	675	0.3688	9.7191
390	0.0004	0.0117	535	0.4950	13.0473	680	0.3222	8.4924
395	0.0002	0.0045	540	0.5139	13.5435	685	0.2791	7.3548
400	0.0006	0.0169	545	0.5321	14.0226	690	0.2402	6.3303
405	0.0001	0.0017	550	0.5552	14.6320	695	0.2074	5.4672
410	0.0001	0.0018	555	0.5822	15.3452	700	0.1778	4.6872
415	0.0008	0.0211	560	0.6128	16.1519	705	0.1522	4.0122
420	0.0014	0.0372	565	0.6517	17.1757	710	0.1300	3.4265
425	0.0048	0.1263	570	0.6915	18.2242	715	0.1107	2.9181
430	0.0134	0.3539	575	0.7389	19.4733	720	0.0930	2.4498
435	0.0276	0.7266	580	0.7862	20.7205	725	0.0816	2.1508
440	0.0556	1.4650	585	0.8351	22.0097	730	0.0679	1.7905
445	0.1068	2.8138	590	0.8855	23.3369	735	0.0563	1.4829
450	0.2146	5.6569	595	0.9269	24.4299	740	0.0468	1.2326
455	0.4505	11.8721	600	0.9621	25.3557	745	0.0396	1.0447
460	0.6734	17.7467	605	0.9883	26.0484	750	0.0385	1.0149
465	0.5558	14.6485	610	0.9978	26.2987	755	0.0266	0.7007
470	0.3917	10.3233	615	0.9946	26.2144	760	0.0196	0.5165
475	0.3540	9.3289	620	0.9784	25.7874	765	0.0150	0.3963
480	0.2880	7.5917	625	0.9481	24.9875	770	0.0092	0.2429
485	0.2279	6.0065	630	0.9052	23.8567	775	0.0071	0.1875
490	0.2282	6.0144	635	0.8500	22.4018	780	0.0044	0.1161
495	0.2503	6.5968	640	0.7939	20.9228	785	0.0037	0.0965
500	0.2775	7.3130	645	0.7307	19.2574	790	0.0018	0.0475
505	0.3189	8.4039	650	0.6669	17.5775	795	0.0005	0.0125
510	0.3637	9.5849	655	0.6033	15.9012	800	0.0040	0.1045
515	0.4007	10.5606	660	0.5395	14.2177			
520	0.4329	11.4093	665	0.4798	12.6462			

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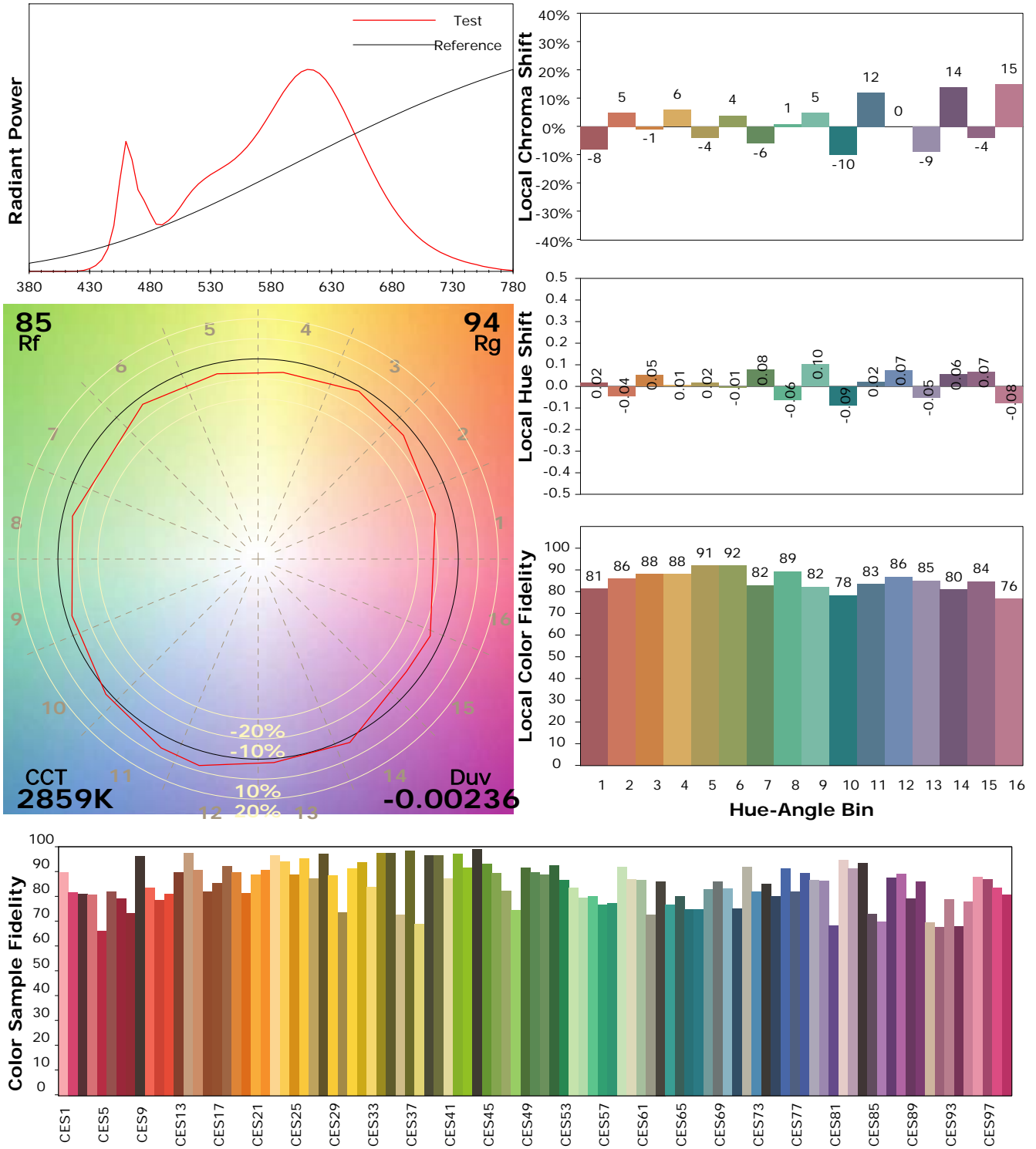
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IES TM-30-18 Color Rendition Report

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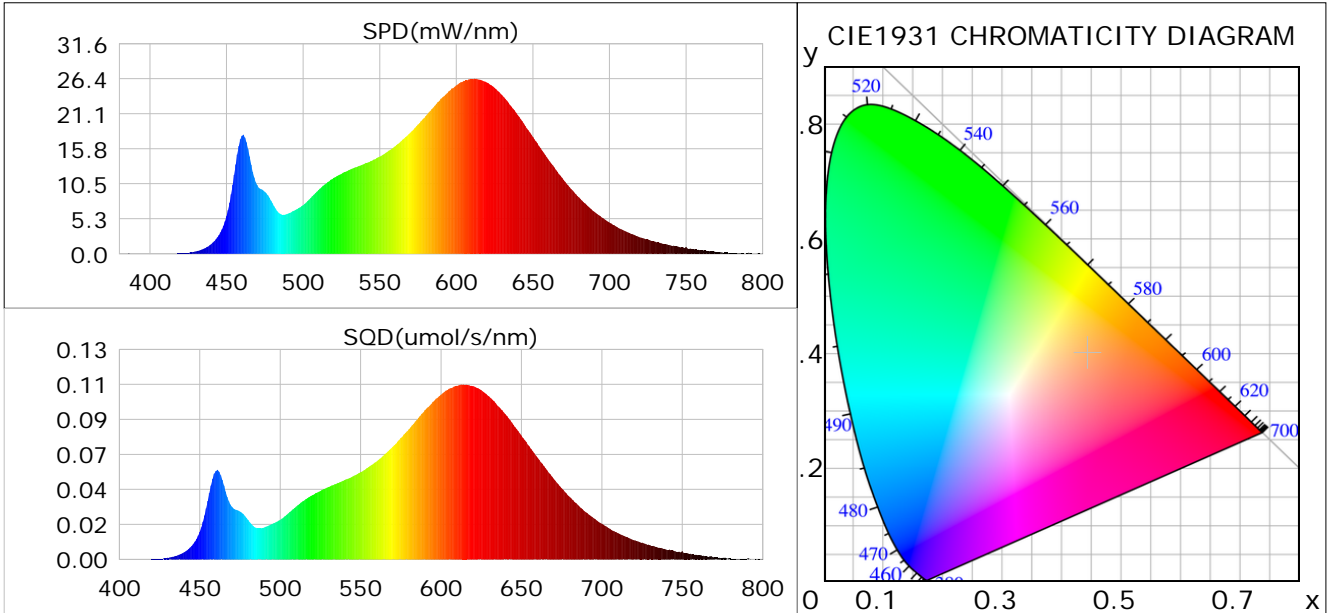
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Plant optical param data

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 CRI: $R_a=87.2$



Plant Optical Param

$ \mu_v(lm): 1226.80$	$Q_v(lm.s): 1226.80$
$ \mu_e, \dot{E}(W/nm): 3.92$	$Q_e(J): 3.92$
$ \mu_e(W): 3.79$	$ \mu_{fr}(W): 0.13$
$ \zeta_e: 0.36$	$ \zeta_{fr}: 0.01$
$PPE(\mu mol/s/w): 1.76$	$K_{fr}: 0.07$
$Erb_Ratio: 3.20$	$PPF(\mu mol/s): 18.43$
$PF_{uv}(360-400)(\mu mol/s): 0.00$	$PPF(400-500)(\mu mol/s): 2.07$
$PPF(500-600)(\mu mol/s): 7.36$	$PPF(600-700)(\mu mol/s): 9.00$
$PPF_r(700-800)(\mu mol/s): 0.77$	$PPF.t(\mu mol): 18.43$
$ \mu_{ch-A.t}(J): 0.30$	$ \mu_{ch-A}(W): 0.30$
$ \mu_{ch-B.t}(J): 0.16$	$ \mu_{ch-B}(W): 0.16$
$ \mu_b.t(J): 0.53$	$ \mu_b(W): 0.53$
$ \mu_y.t(J): 1.58$	$ \mu_y(W): 1.58$
$ \mu_r.t(J): 1.71$	$ \mu_r(W): 1.71$

Electric Parameters

Voltage: 24.010V	Current: 0.4360A	Power: 10.46W
Power Factor: 0.7310	Frequency: 49.99Hz	

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