

Lightsource Test Report

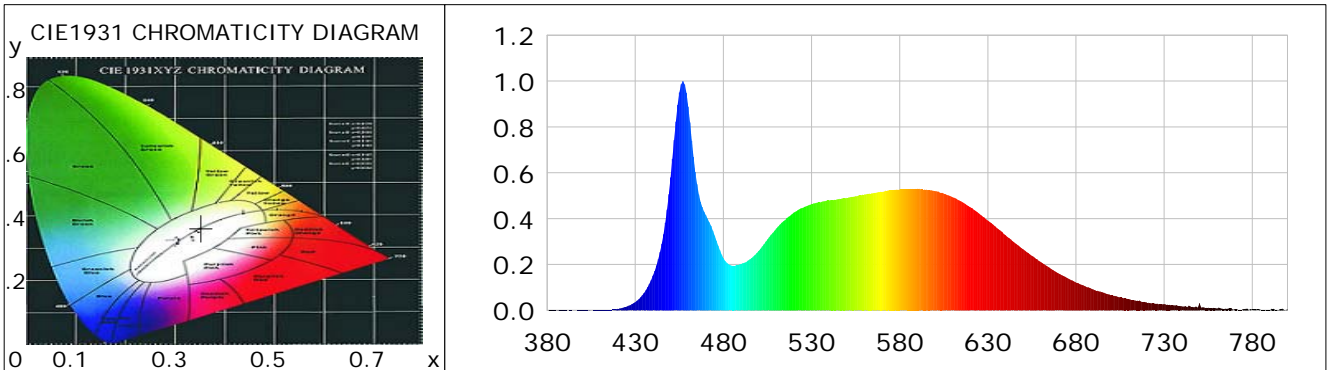
Product Information

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

Product Type: LED-Röhre-Spezial
 Product Number: 3
 Submitted Unit: 101730

CIE Colorimetric Parameters

Chromaticity coordinates: $x=0.3526$ $y=0.3630$ $u(u')=0.2121$ $v=0.3275$ $v'=0.4912$
 CCT: $T_c=4773K$ ($duv=0.00269$) Color Ratio: $R=0.164$ $G=0.791$ $B=0.045$
 Peak Wavelength: 457.0nm Half Bandwidth: 17.3nm
 Dominant Wavelength: 572.9nm Color Purity: 0.147
 CRI: $R_a=83.6$, $avgR(1\sim14)=76.5$, $avgR(1\sim15)=76.6$ TM30: $R_f=81$, $R_g=92$
 GAI: $GAI_BB_8=87.8$, $GAI_BB_15=96.3$, $GAI_EES=78.1$
 R1 =83 R2 =91 R3 =95 R4 =79 R5 =81 R6 =86 R7 =87 R8 =68
 R9 =16 R10=76 R11=78 R12=50 R13=85 R14=97 R15=78
 Color Quality Scale: $Q_a=81.8$, $Q_f=82.1$, $Q_p=80.6$, $Q_g=90.5$
 Q1 =80 Q2 =97 Q3 =79 Q4 =71 Q5 =75 Q6 =78 Q7 =84 Q8 =89
 Q9 =97 Q10=91 Q11=87 Q12=86 Q13=86 Q14=75 Q15=78



Photometric Parameters

Luminous Flux: 1092.8 lm Efficiency: 119.04 lm/W Radiant Power: 3.364 W
 Total mains efficacy: 139.99 lm/W Energy Efficiency Class: D (EU 2019/2015)
 Pupil Flux: 1822.02 Plm Pupil Lumens Per Watt: 198.48 Plm/W Pupil Factor (Kp): 1.667
 Circopic Flux: 3945.17 lm

Electric Parameters

Voltage: 24.100V Current: 0.3410A Power: 9.18W
 Power Factor: 0.6920 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: 46034 (2621) CCD Integration Time: 189.70 ms

Condition: Tx:21.8°C, Ti:0.0°C, R.H.:60%
 Test Lab: Asmetec
 Operator: CRE

Test Device: Lisun LMS-9000B
 Test Time: 2021-02-15 15:08:01
 Inspector:

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WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0005	0.0159	525	0.4474	14.5623	670	0.1616	5.2605
385	0.0007	0.0230	530	0.4628	15.0658	675	0.1414	4.6028
390	0.0008	0.0256	535	0.4712	15.3377	680	0.1217	3.9606
395	0.0007	0.0223	540	0.4795	15.6077	685	0.1055	3.4354
400	0.0019	0.0615	545	0.4847	15.7790	690	0.0901	2.9315
405	0.0005	0.0166	550	0.4907	15.9736	695	0.0784	2.5520
410	0.0018	0.0594	555	0.4974	16.1905	700	0.0656	2.1349
415	0.0033	0.1090	560	0.5048	16.4304	705	0.0570	1.8568
420	0.0067	0.2183	565	0.5117	16.6548	710	0.0494	1.6064
425	0.0160	0.5196	570	0.5170	16.8275	715	0.0423	1.3781
430	0.0360	1.1728	575	0.5240	17.0555	720	0.0346	1.1272
435	0.0760	2.4733	580	0.5272	17.1594	725	0.0292	0.9490
440	0.1513	4.9251	585	0.5291	17.2222	730	0.0276	0.8983
445	0.2907	9.4616	590	0.5300	17.2535	735	0.0224	0.7303
450	0.5799	18.8753	595	0.5266	17.1421	740	0.0178	0.5796
455	0.9502	30.9293	600	0.5202	16.9328	745	0.0162	0.5279
460	0.8888	28.9299	605	0.5092	16.5749	750	0.0310	1.0102
465	0.5508	17.9284	610	0.4934	16.0616	755	0.0116	0.3778
470	0.4154	13.5225	615	0.4753	15.4712	760	0.0080	0.2614
475	0.3266	10.6309	620	0.4498	14.6420	765	0.0081	0.2646
480	0.2282	7.4279	625	0.4219	13.7318	770	0.0050	0.1614
485	0.1946	6.3343	630	0.3916	12.7462	775	0.0055	0.1802
490	0.2020	6.5768	635	0.3602	11.7236	780	0.0040	0.1311
495	0.2223	7.2353	640	0.3278	10.6693	785	0.0020	0.0659
500	0.2593	8.4420	645	0.2964	9.6479	790	0.0012	0.0375
505	0.3099	10.0889	650	0.2665	8.6762	795	0.0033	0.1070
510	0.3571	11.6241	655	0.2375	7.7319	800	0.0057	0.1856
515	0.3942	12.8320	660	0.2113	6.8793			
520	0.4267	13.8896	665	0.1861	6.0593			

Condition: Tx:21.8'C, Ti:0.0'C, R.H.:60%
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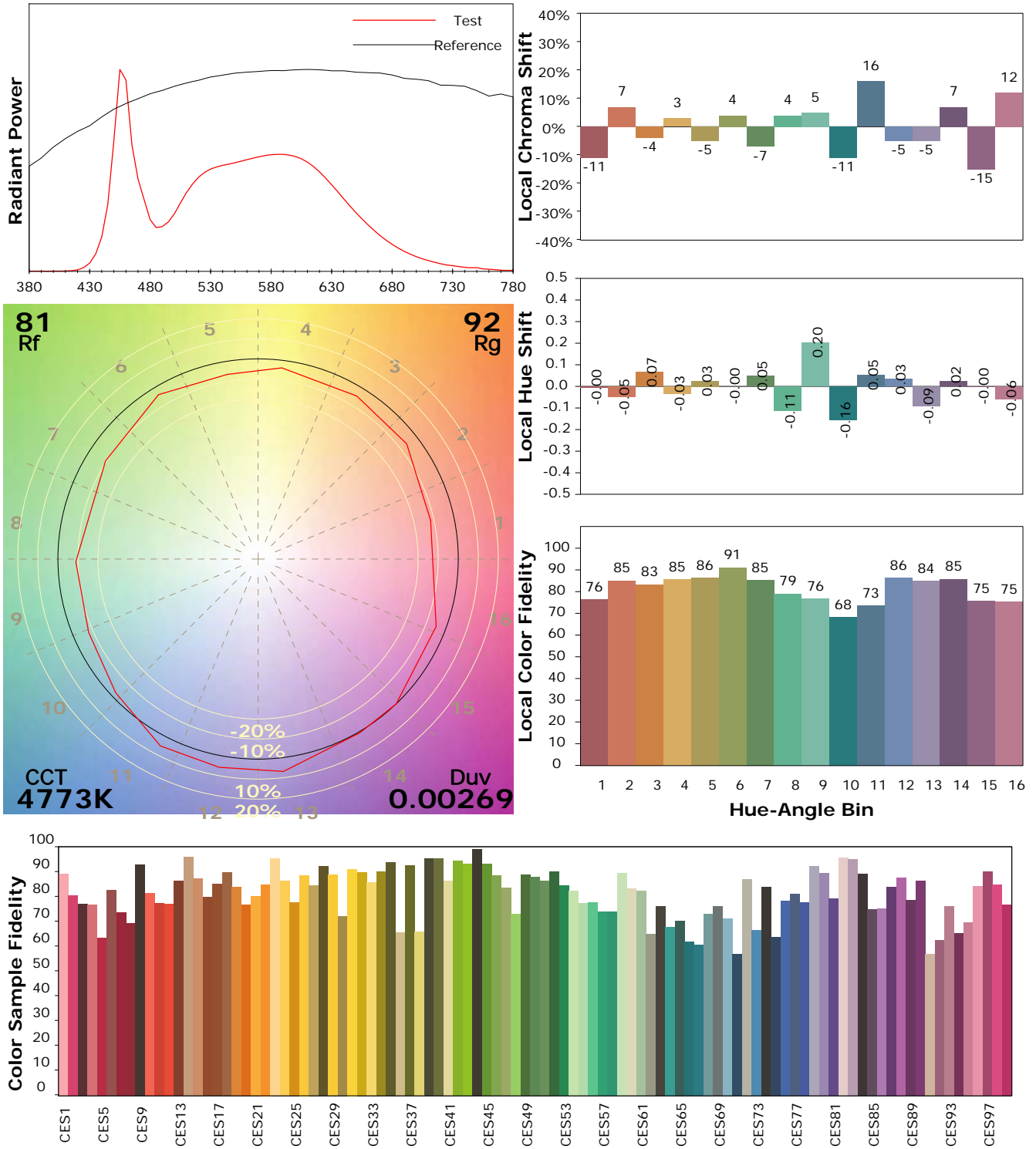
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IES TM-30-18 Color Rendition Report

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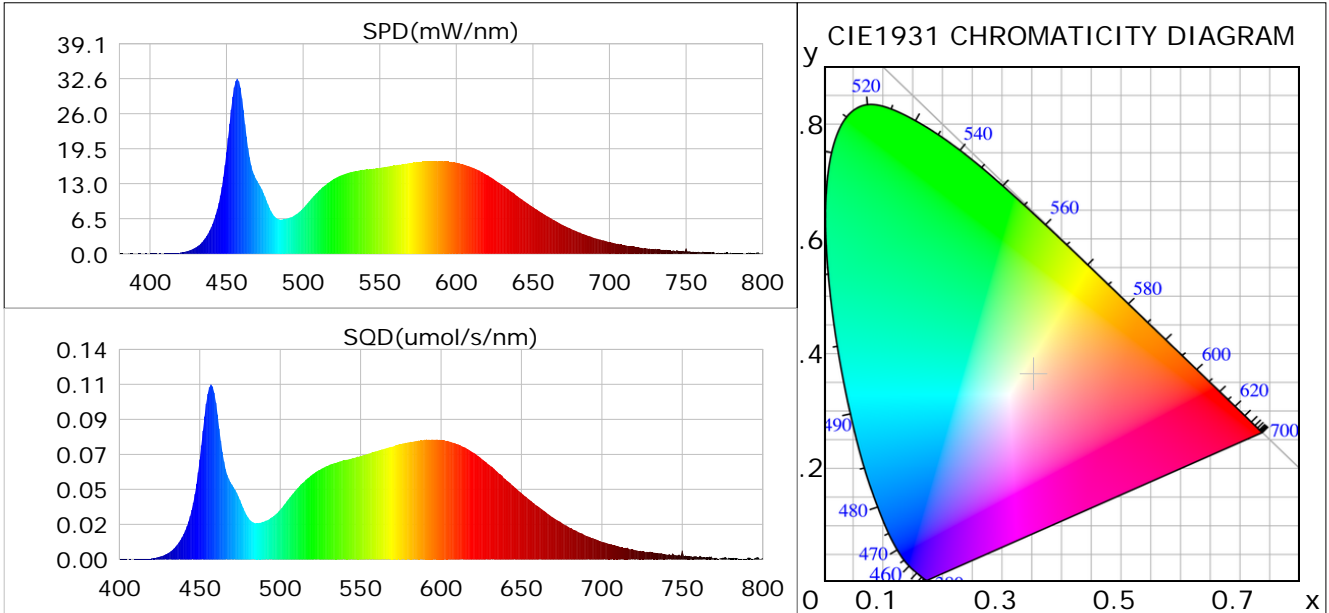
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Plant optical param data

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 CRI: $R_a=83.6$



Plant Optical Param

$ \mu_v(lm): 1092.80$	$Q_v(lm.s): 1092.80$
$ \mu_e, \dot{E}(W/nm): 3.36$	$Q_e(J): 3.36$
$ \mu_e(W): 3.30$	$ \mu_{fr}(W): 0.07$
$ \zeta_e: 0.36$	$ \zeta_{fr}: 0.01$
$PPE(umol/s/w): 1.66$	$K_{fr}: 0.04$
$Erb_Ratio: 1.05$	$PPF(umol/s): 15.26$
$PF_{uv}(360-400)(umol/s): 0.00$	$PPF(400-500)(umol/s): 3.34$
$PPF(500-600)(umol/s): 7.10$	$PPF(600-700)(umol/s): 4.82$
$PPF_{fr}(700-800)(umol/s): 0.39$	$PPF.t(umol): 15.26$
$ \mu_{ch-A.t}(J): 0.25$	$ \mu_{ch-A}(W): 0.25$
$ \mu_{ch-B.t}(J): 0.18$	$ \mu_{ch-B}(W): 0.18$
$ \mu_b.t(J): 0.86$	$ \mu_b(W): 0.86$
$ \mu_y.t(J): 1.54$	$ \mu_y(W): 1.54$
$ \mu_r.t(J): 0.92$	$ \mu_r(W): 0.92$

Electric Parameters

Voltage: 24.100V	Current: 0.3410A	Power: 9.18W
Power Factor: 0.6920	Frequency: 49.99Hz	

Condition: $T_x: 21.8^\circ C$, $T_i: 0.0^\circ C$, R.H.: 60%
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