

Lightsource Test Report

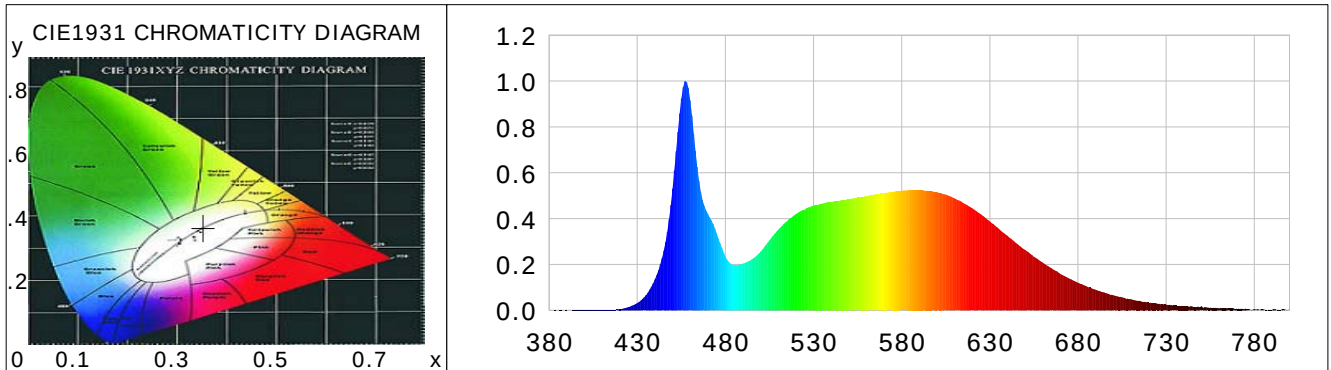
Product Information

Product Category: LED-Röhre
Product Spec: LEDtube-120-8DWM-20W-SCE-24
Manufacturer: METOLIGHT
Buyer: 4624 - 20915

Product Type: 12/24 Volt
Product Number: 1
Submitted Unit: 102157

CIE Colorimetric Parameters

Chromaticity coordinates: $x=0.3530$ $y=0.3639$ $u(u')=0.2120$ $v=0.3278$ $v'=0.4917$
CCT: $T_c=4762K$ ($duv=0.00301$) Color Ratio: $R=0.164$ $G=0.790$ $B=0.046$
Peak Wavelength: 457.4nm Half Bandwidth: 16.9nm
Dominant Wavelength: 572.8nm Color Purity: 0.152
CRI: $R_a=83.6$, $avgR(1\sim14)=76.6$, $avgR(1\sim15)=76.6$ TM30: $R_f=81$, $R_g=91$
GAI: $GAI_BB_8=87.2$, $GAI_BB_15=95.8$, $GAI_EES=77.4$
 $R1=83$ $R2=91$ $R3=95$ $R4=79$ $R5=81$ $R6=86$ $R7=86$ $R8=68$
 $R9=16$ $R10=77$ $R11=77$ $R12=50$ $R13=86$ $R14=98$ $R15=78$
Color Quality Scale: $Q_a=81.8$, $Q_f=82.1$, $Q_p=80.3$, $Q_g=90.1$
 $Q1=80$ $Q2=96$ $Q3=80$ $Q4=71$ $Q5=75$ $Q6=77$ $Q7=84$ $Q8=89$
 $Q9=97$ $Q10=91$ $Q11=87$ $Q12=86$ $Q13=86$ $Q14=75$ $Q15=78$



Photometric Parameters

Luminous Flux: 1900.1 lm Efficiency: 121.26 lm/W Radiant Power: 5.845 W
Total mains efficacy: 142.60 lm/W Energy Efficiency Class: D (EU 2019/2015)
Pupil Flux: 3173.68 Plm Pupil Lumens Per Watt: 202.53 Plm/W Pupil Factor (K_p): 1.670
Cirtopic Flux: 6887.18 lm

Electric Parameters

Voltage: 24.000V Current: 0.6530A Power: 15.67W
Power Factor: 0.7330 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: 45700 (2438) CCD Integration Time: 91.62 ms

Condition: $T_x=20.8^\circ C$, $T_i=0.0^\circ C$, R.H.:60%
Test Lab:
Operator: CRE

Test Device: Lisun LMS-9000B
Test Time: 2020-12-16 14:08:35
Inspector:

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WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0009	0.0504	525	0.4394	25.1509	670	0.1595	9.1332
385	0.0006	0.0324	530	0.4563	26.1217	675	0.1394	7.9789
390	0.0007	0.0400	535	0.4651	26.6275	680	0.1205	6.8976
395	0.0007	0.0414	540	0.4728	27.0648	685	0.1043	5.9726
400	0.0009	0.0509	545	0.4782	27.3746	690	0.0896	5.1274
405	0.0010	0.0588	550	0.4840	27.7091	695	0.0777	4.4493
410	0.0016	0.0904	555	0.4926	28.2017	700	0.0662	3.7913
415	0.0031	0.1771	560	0.4991	28.5711	705	0.0569	3.2572
420	0.0058	0.3331	565	0.5055	28.9390	710	0.0486	2.7796
425	0.0142	0.8110	570	0.5120	29.3105	715	0.0413	2.3630
430	0.0315	1.8052	575	0.5173	29.6136	720	0.0347	1.9871
435	0.0668	3.8220	580	0.5231	29.9441	725	0.0298	1.7077
440	0.1352	7.7424	585	0.5238	29.9848	730	0.0258	1.4756
445	0.2605	14.9104	590	0.5243	30.0122	735	0.0213	1.2213
450	0.5309	30.3902	595	0.5210	29.8264	740	0.0186	1.0624
455	0.9244	52.9176	600	0.5153	29.5011	745	0.0164	0.9384
460	0.9161	52.4400	605	0.5048	28.8967	750	0.0181	1.0357
465	0.5660	32.4004	610	0.4884	27.9565	755	0.0121	0.6899
470	0.4218	24.1459	615	0.4682	26.8044	760	0.0089	0.5067
475	0.3370	19.2908	620	0.4456	25.5101	765	0.0084	0.4811
480	0.2349	13.4454	625	0.4184	23.9494	770	0.0073	0.4174
485	0.1973	11.2918	630	0.3879	22.2032	775	0.0076	0.4359
490	0.2040	11.6799	635	0.3562	20.3887	780	0.0049	0.2811
495	0.2223	12.7271	640	0.3249	18.6002	785	0.0045	0.2549
500	0.2565	14.6840	645	0.2927	16.7574	790	0.0022	0.1275
505	0.3055	17.4875	650	0.2634	15.0768	795	0.0029	0.1643
510	0.3522	20.1604	655	0.2338	13.3819	800	0.0042	0.2425
515	0.3892	22.2789	660	0.2080	11.9098			
520	0.4201	24.0512	665	0.1832	10.4883			

Condition: Tx:20.8'C, Ti:0.0'C, R.H.:60%
 Test Lab:
 Operator: CRE

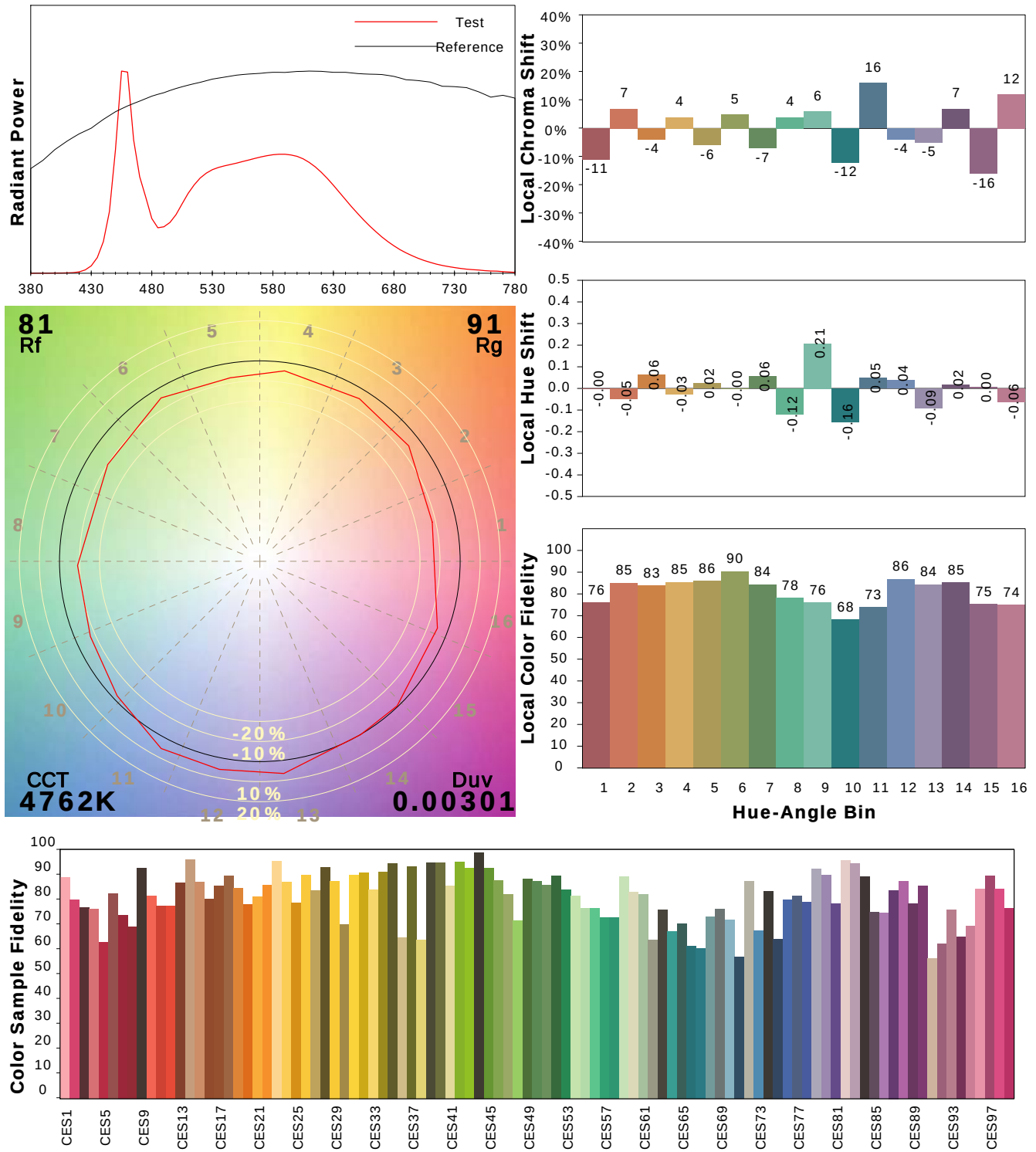
Test Device: Lisun LMS-9000B
 Test Time: 2020-12-16 14:08:35
 Inspector:

IES TM-30-18 Color Rendition Report

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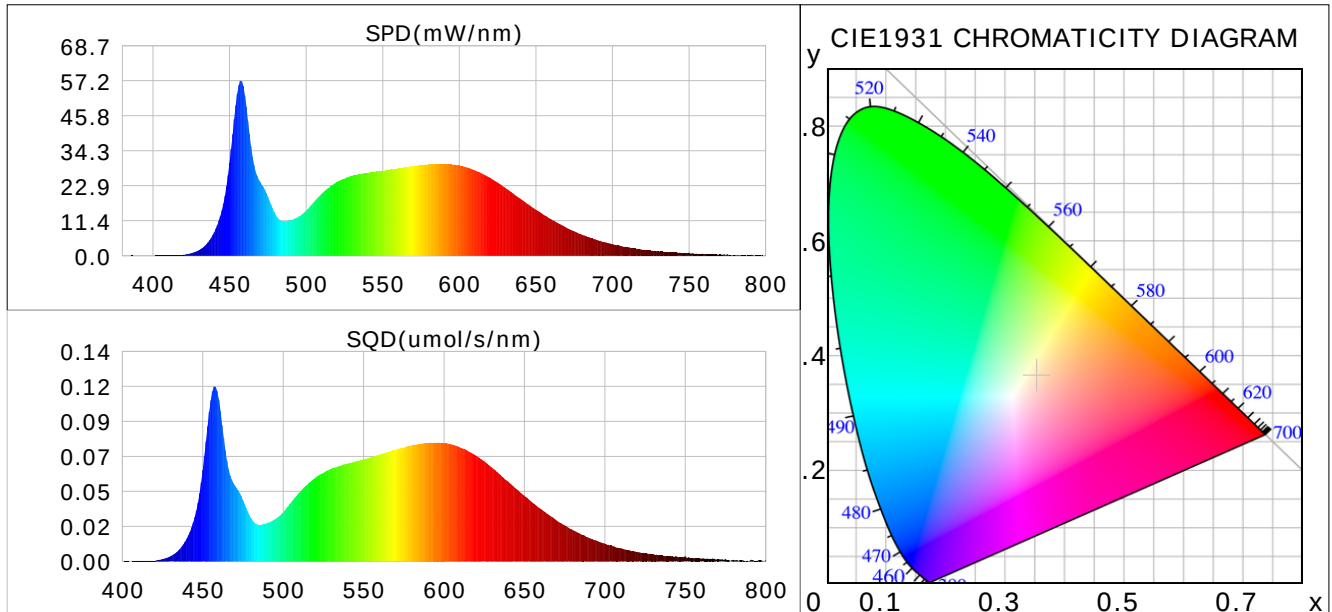
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Plant optical param data

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 Dominant Wavelength: 572.8nm Color Purity: 0.152
 CRI: Ra= 83.6



Plant Optical Param

$\mu_v(lm)$: 1900.10	$Q_v(lm.s)$: 1900.10
$\mu_e, \dot{E}(W/nm)$: 5.84	$Q_e(J)$: 5.84
$\mu_e(W)$: 5.74	$\mu_{fr}(W)$: 0.12
$\dot{C}_e$: 0.37	$\dot{C}_{fr}$: 0.01
$PPE(umol/s/w)$: 1.69	K_{fr} : 0.04
Erb_Ratio : 1.05	$PPF(umol/s)$: 26.51
$PF_{uv}(360-400)(umol/s)$: 0.00	$PPF(400-500)(umol/s)$: 5.80
$PPF(500-600)(umol/s)$: 12.33	$PPF(600-700)(umol/s)$: 8.38
$PF_{fr}(700-800)(umol/s)$: 0.68	$PPF.t(umol)$: 26.51
$\mu_{ch-A.t}(J)$: 0.42	$\mu_{ch-A}(W)$: 0.42
$\mu_{ch-B.t}(J)$: 0.31	$\mu_{ch-B}(W)$: 0.31
$\mu_b.t(J)$: 1.50	$\mu_b(W)$: 1.50
$\mu_y.t(J)$: 2.68	$\mu_y(W)$: 2.68
$\mu_r.t(J)$: 1.61	$\mu_r(W)$: 1.61

Electric Parameters

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Power Factor: 0.7330	Frequency: 49.99Hz	

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