

Lightsource Test Report

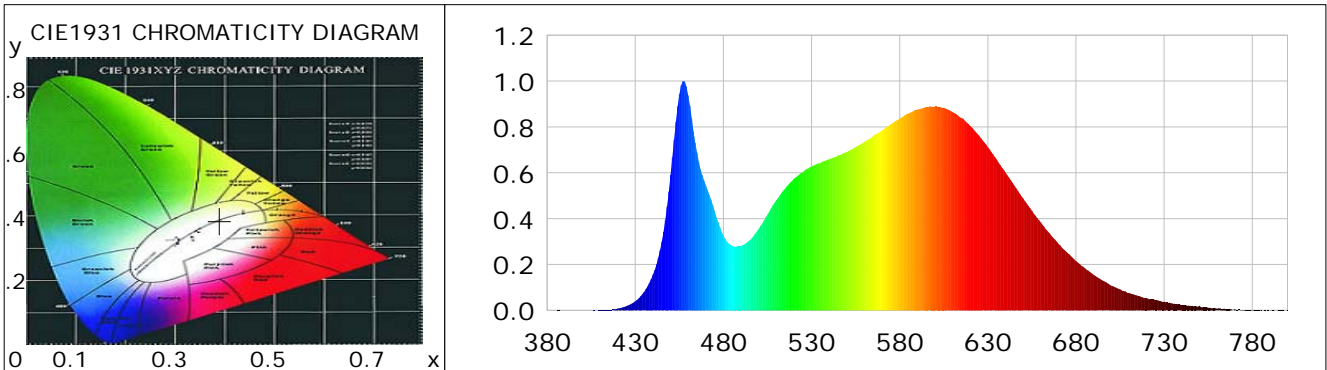
Product Information

Product Category: LED-Röhre
 Product Spec: LEDtube-115-6NWM-20W-175
 Manufacturer: METOLIGHT
 Buyer: 6961

Product Type: LED-Röhre-SCE
 Product Number: 1
 Submitted Unit: 102921

CIE Colorimetric Parameters

Chromaticity coordinates: $x=0.3897$ $y=0.3855$ $u(u')=0.2277$ $v=0.3378$ $v'=0.5067$
 CCT: $T_c=3825K$ ($duv=0.00145$) Color Ratio: $R=0.192$ $G=0.770$ $B=0.038$
 Peak Wavelength: 457.4nm Half Bandwidth: 23.5nm
 Dominant Wavelength: 597.9nm Color Purity: 0.327
 CRI: $R_a=84.6$, $avgR(1\sim14)=78.5$, $avgR(1\sim15)=78.5$ TM30: $R_f=83$, $R_g=92$
 GAI: $GAI_BB_8=88.9$, $GAI_BB_15=98.0$, $GAI_EES=67.5$
 R1 =84 R2 =93 R3 =96 R4 =81 R5 =83 R6 =89 R7 =85 R8 =66
 R9 =17 R10=81 R11=80 R12=59 R13=87 R14=99 R15=78
 Color Quality Scale: $Q_a=83.7$, $Q_f=84.1$, $Q_p=82.1$, $Q_g=91.0$
 Q1 =80 Q2 =96 Q3 =83 Q4 =76 Q5 =79 Q6 =81 Q7 =85 Q8 =90
 Q9 =98 Q10=93 Q11=89 Q12=87 Q13=86 Q14=76 Q15=78



Photometric Parameters

Luminous Flux: 3139.0 lm Efficiency: 154.78 lm/W Radiant Power: 9.450 W
 Total mains efficacy: 182.02 lm/W Energy Efficiency Class: C (EU 2019/2015)
 Pupil Flux: 4695.66 Plm Pupil Lumens Per Watt: 231.54 Plm/W Pupil Factor (Kp): 1.496
 Circopic Flux: 9583.34 lm

Electric Parameters

Voltage: 230.60V Current: 0.0900A Power: 20.28W
 Power Factor: 0.9670 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: 54027 (2450) CCD Integration Time: 123.78 ms

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WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0006	0.0368	525	0.6012	37.2709	670	0.2913	18.0605
385	0.0002	0.0114	530	0.6280	38.9323	675	0.2520	15.6247
390	0.0004	0.0240	535	0.6429	39.8540	680	0.2156	13.3684
395	0.0001	0.0044	540	0.6591	40.8636	685	0.1839	11.4038
400	0.0009	0.0567	545	0.6751	41.8511	690	0.1545	9.5793
405	0.0002	0.0095	550	0.6909	42.8347	695	0.1300	8.0610
410	0.0008	0.0488	555	0.7127	44.1815	700	0.1078	6.6853
415	0.0027	0.1698	560	0.7355	45.5974	705	0.0918	5.6897
420	0.0080	0.4932	565	0.7620	47.2426	710	0.0758	4.7022
425	0.0187	1.1562	570	0.7857	48.7086	715	0.0639	3.9644
430	0.0395	2.4472	575	0.8117	50.3182	720	0.0532	3.2954
435	0.0796	4.9355	580	0.8373	51.9055	725	0.0451	2.7968
440	0.1550	9.6078	585	0.8583	53.2083	730	0.0379	2.3516
445	0.3000	18.5987	590	0.8760	54.3047	735	0.0295	1.8289
450	0.5906	36.6165	595	0.8868	54.9741	740	0.0235	1.4584
455	0.9424	58.4262	600	0.8891	55.1177	745	0.0196	1.2145
460	0.9381	58.1561	605	0.8831	54.7479	750	0.0201	1.2489
465	0.6887	42.6949	610	0.8646	53.6008	755	0.0116	0.7209
470	0.5457	33.8319	615	0.8393	52.0302	760	0.0074	0.4574
475	0.4335	26.8724	620	0.8047	49.8856	765	0.0058	0.3572
480	0.3264	20.2328	625	0.7620	47.2389	770	0.0042	0.2628
485	0.2813	17.4369	630	0.7111	44.0865	775	0.0037	0.2280
490	0.2806	17.3964	635	0.6579	40.7851	780	0.0037	0.2302
495	0.3063	18.9858	640	0.6012	37.2697	785	0.0018	0.1135
500	0.3550	22.0051	645	0.5446	33.7597	790	0.0005	0.0287
505	0.4177	25.8947	650	0.4880	30.2561	795	0.0026	0.1582
510	0.4804	29.7824	655	0.4347	26.9480	800	0.0016	0.0998
515	0.5307	32.8979	660	0.3840	23.8054			
520	0.5740	35.5867	665	0.3358	20.8192			

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

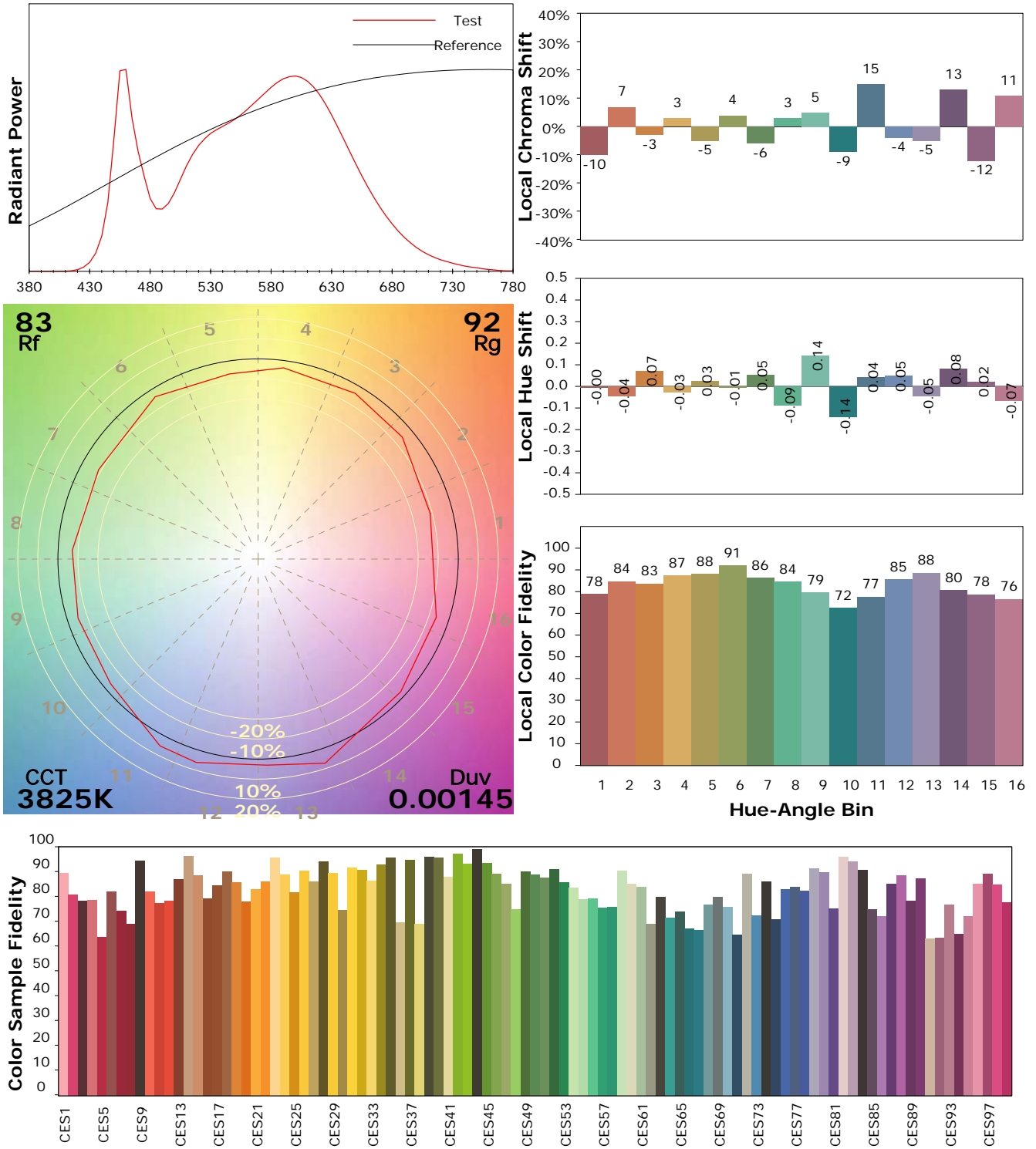
Test Device: Lisun LMS-9000B
 Test Time: 2021-02-22 14:11:59
 Inspector:

I ES TM-30-18 Color Rendition Report

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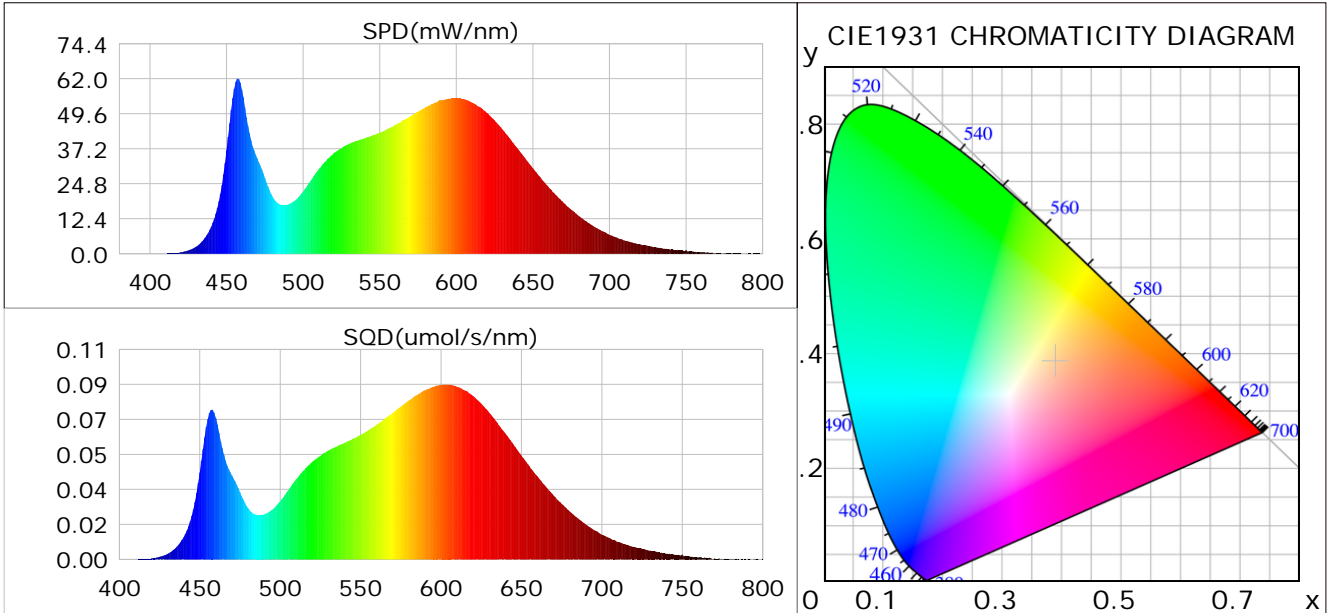
Condition: Tx:0.0°C, Ti:0.0°C, R.H.: 60%
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 Operator: CRE

Test Device: Lisun LMS-9000B
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Plant optical param data

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 Dominant Wavelength: 597.9nm Color Purity: 0.327
 CRI: $R_a=84.6$



Plant Optical Param

$ \mu_v(lm): 3139.00$	$Q_v(lm.s): 3139.00$
$ \mu_e, \dot{E}(W/nm): 9.45$	$Q_e(J): 9.45$
$ \mu_e(W): 9.28$	$ \mu_{fr}(W): 0.17$
$ \zeta_e: 0.46$	$ \zeta_{fr}: 0.01$
$PPE(umol/s/w): 2.16$	$K_{fr}: 0.05$
$Erb_Ratio: 1.62$	$PPF(umol/s): 43.77$
$PF_{uv}(360-400)(umol/s): 0.00$	$PPF(400-500)(umol/s): 7.41$
$PPF(500-600)(umol/s): 19.95$	$PPF(600-700)(umol/s): 16.40$
$PPF_{fr}(700-800)(umol/s): 1.01$	$PPF.t(umol): 43.77$
$ \mu_{ch-A.t}(J): 0.69$	$ \mu_{ch-A}(W): 0.69$
$ \mu_{ch-B.t}(J): 0.44$	$ \mu_{ch-B}(W): 0.44$
$ \mu_b.t(J): 1.91$	$ \mu_b(W): 1.91$
$ \mu_y.t(J): 4.31$	$ \mu_y(W): 4.31$
$ \mu_r.t(J): 3.14$	$ \mu_r(W): 3.14$

Electric Parameters

Voltage: 230.60V	Current: 0.0900A	Power: 20.28W
Power Factor: 0.9670	Frequency: 49.99Hz	

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

Test Device: Lisun LMS-9000B
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