

Lightsource Test Report

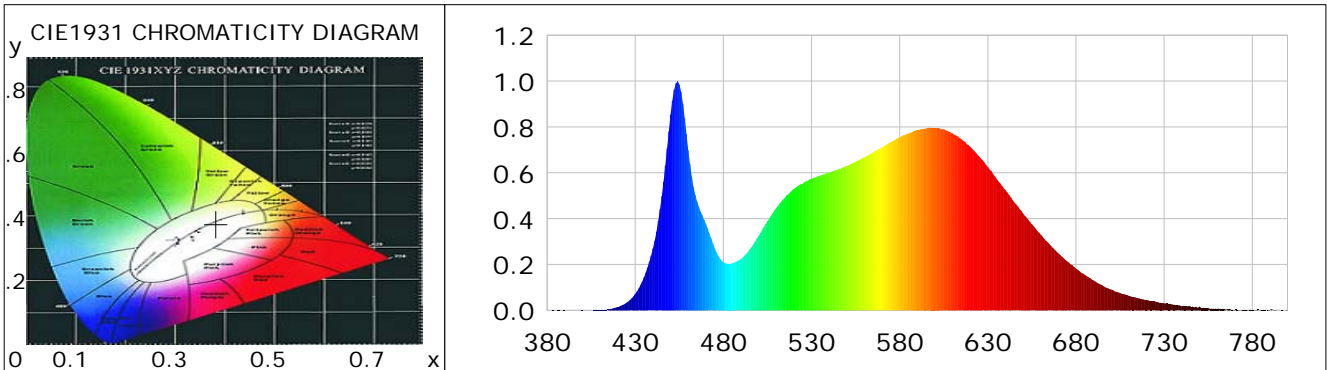
Product Information

Product Category: LED-Röhre
 Product Spec: Ledtube-120-8NWM-23W-VDE-RM
 Manufacturer: METOLIGHT
 Buyer: 6361

Product Type: LED-Röhre-VDE
 Product Number: 1
 Submitted Unit: 101195

CIE Colorimetric Parameters

Chromaticity coordinates: $x=0.3827$ $y=0.3759$ $u(u')=0.2269$ $v=0.3344$ $v'=0.5016$
 CCT: $T_c=3932K$ ($duv=-0.00104$) Color Ratio: $R=0.189$ $G=0.776$ $B=0.035$
 Peak Wavelength: 453.9nm Half Bandwidth: 19.1nm
 Dominant Wavelength: 579.9nm Color Purity: 0.277
 CRI: $R_a=83.9$, $avgR(1\sim14)=77.5$, $avgR(1\sim15)=77.5$ TM30: $R_f=83$, $R_g=96$
 GAI: $GAI_BB_8=94.5$, $GAI_BB_15=102.3$, $GAI_EES=73.5$
 R1 =83 R2 =90 R3 =94 R4 =83 R5 =83 R6 =86 R7 =86 R8 =67
 R9 =15 R10=76 R11=81 R12=59 R13=85 R14=97 R15=78
 Color Quality Scale: $Q_a=82.7$, $Q_f=82.6$, $Q_p=83.1$, $Q_g=93.6$
 Q1 =83 Q2 =98 Q3 =78 Q4 =74 Q5 =80 Q6 =83 Q7 =86 Q8 =89
 Q9 =97 Q10=88 Q11=85 Q12=84 Q13=84 Q14=75 Q15=78



Photometric Parameters

Luminous Flux: 3075.3 lm Efficiency: 134.70 lm/W Radiant Power: 9.280 W
 Total mains efficacy: 158.41 lm/W Energy Efficiency Class: D (EU 2019/2015)
 Pupil Flux: 4596.25 Plm Pupil Lumens Per Watt: 201.33 Plm/W Pupil Factor (Kp): 1.495
 Circopic Flux: 9305.67 lm

Electric Parameters

Voltage: 230.80V Current: 0.1060A Power: 22.83W
 Power Factor: 0.9270 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: 45783 (2358) CCD Integration Time: 103.41 ms

Condition: Tx:19.6'C, Ti:0.0'C, R.H.:60%
 Test Lab:
 Operator: CRE

Test Device: Lisun LMS-9000B
 Test Time: 2021-01-22 11:37:19
 Inspector:

Lightsource Test Report

Product Information

Product Category: LED-Röhre
 Product Spec: Ledtube-120-8NWM-23W-VDE-RM
 Manufacturer: METOLIGHT
 Buyer: 6361

Product Type: LED-Röhre-VDE
 Product Number: 1
 Submitted Unit: 101195

WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0004	0.0291	525	0.5525	37.2197	670	0.2490	16.7727
385	0.0003	0.0201	530	0.5744	38.6934	675	0.2141	14.4247
390	0.0008	0.0545	535	0.5883	39.6320	680	0.1826	12.2984
395	0.0004	0.0245	540	0.6003	40.4396	685	0.1549	10.4334
400	0.0009	0.0583	545	0.6144	41.3880	690	0.1300	8.7549
405	0.0005	0.0343	550	0.6306	42.4819	695	0.1084	7.3023
410	0.0020	0.1352	555	0.6486	43.6949	700	0.0912	6.1469
415	0.0049	0.3277	560	0.6667	44.9149	705	0.0758	5.1035
420	0.0147	0.9923	565	0.6906	46.5208	710	0.0631	4.2541
425	0.0329	2.2147	570	0.7109	47.8886	715	0.0531	3.5769
430	0.0720	4.8506	575	0.7342	49.4598	720	0.0447	3.0113
435	0.1443	9.7182	580	0.7549	50.8567	725	0.0387	2.6074
440	0.2689	18.1119	585	0.7721	52.0107	730	0.0314	2.1135
445	0.4979	33.5438	590	0.7871	53.0205	735	0.0256	1.7249
450	0.8539	57.5211	595	0.7937	53.4675	740	0.0188	1.2636
455	0.9854	66.3825	600	0.7964	53.6475	745	0.0170	1.1449
460	0.6990	47.0853	605	0.7903	53.2382	750	0.0163	1.1000
465	0.4752	32.0133	610	0.7715	51.9723	755	0.0095	0.6414
470	0.3778	25.4520	615	0.7467	50.3003	760	0.0072	0.4871
475	0.2718	18.3075	620	0.7138	48.0861	765	0.0036	0.2418
480	0.2104	14.1733	625	0.6710	45.2033	770	0.0039	0.2615
485	0.2051	13.8192	630	0.6244	42.0632	775	0.0034	0.2302
490	0.2243	15.1125	635	0.5730	38.6022	780	0.0016	0.1088
495	0.2660	17.9214	640	0.5240	35.3007	785	0.0008	0.0527
500	0.3250	21.8957	645	0.4710	31.7270	790	0.0030	0.2013
505	0.3892	26.2169	650	0.4221	28.4337	795	0.0005	0.0357
510	0.4469	30.1064	655	0.3749	25.2564	800	0.0041	0.2755
515	0.4923	33.1663	660	0.3305	22.2641			
520	0.5293	35.6585	665	0.2877	19.3811			

Condition: Tx:19.6'C, Ti:0.0'C, R.H.:60%
 Test Lab:
 Operator: CRE

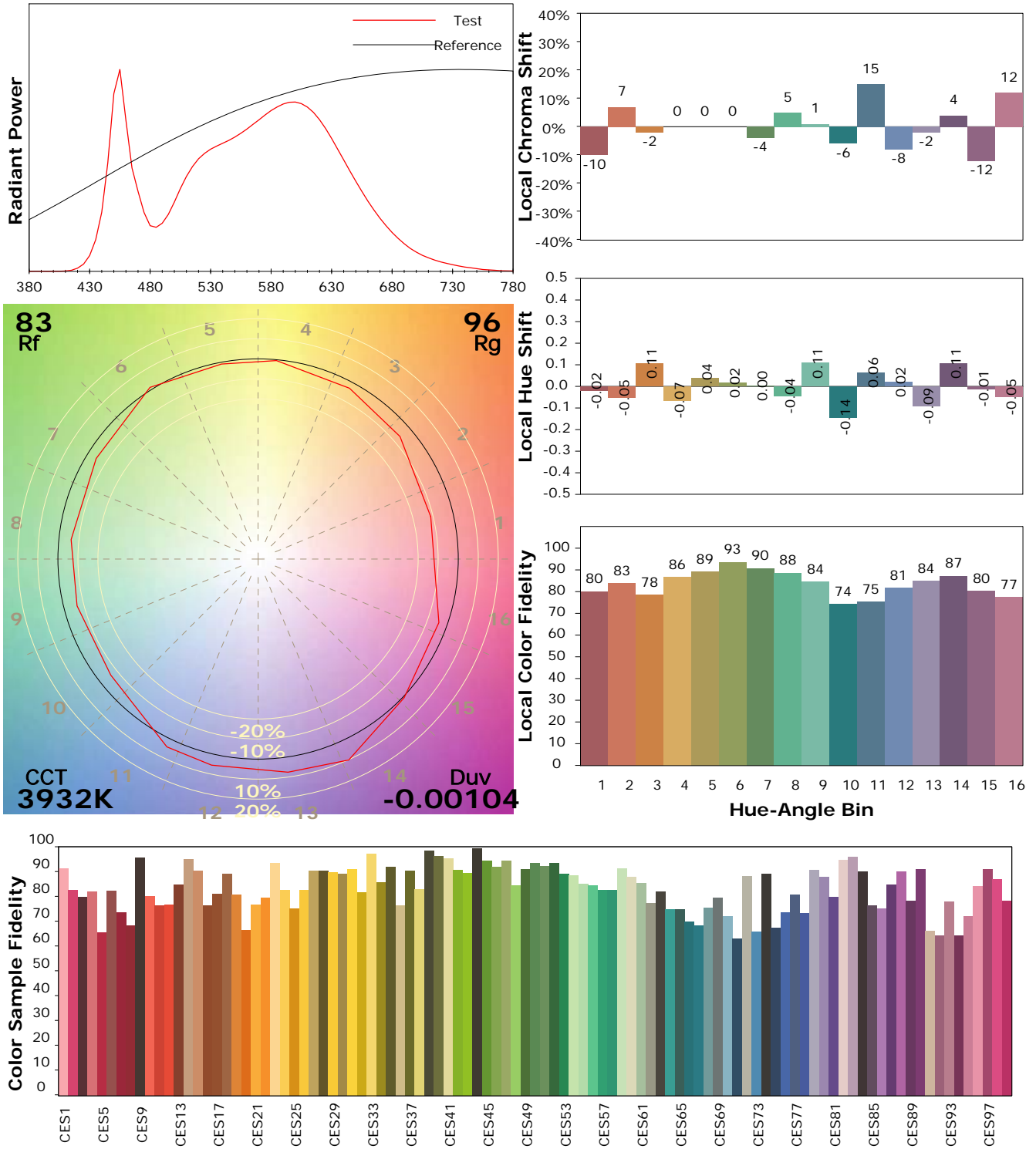
Test Device: Lisun LMS-9000B
 Test Time: 2021-01-22 11:37:19
 Inspector:

IES TM-30-18 Color Rendition Report

Product Information

Product Category: LED-Röhre
 Product Spec: Ledtube-120-8NWM-23W-VDE-RM
 Manufacturer: METOLIGHT
 Buyer: 6361

Product Type: LED-Röhre-VDE
 Product Number: 1
 Submitted Unit: 101195



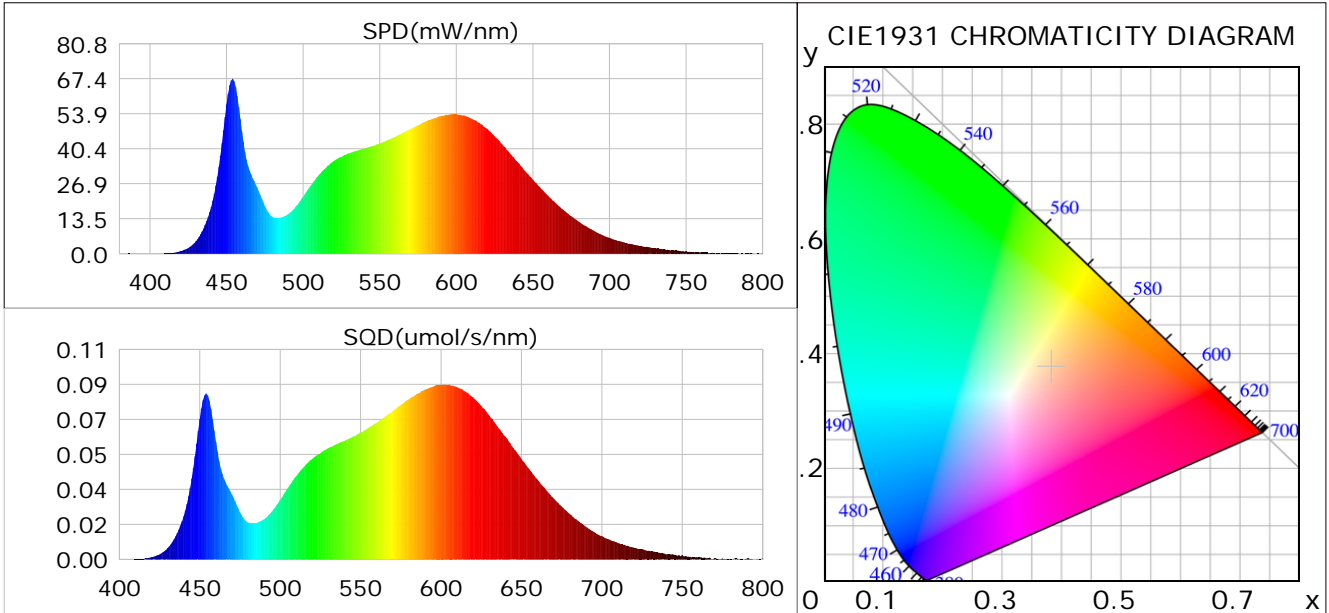
Condition: Tx: 19.6°C, Ti: 0.0°C, R.H.: 60%
 Test Lab:
 Operator: CRE

Test Device: Lisun LMS-9000B
 Test Time: 2021-01-22 11:37:19
 Inspector:

Plant optical param data

CIE Colorimetric Parameters

Chromaticity coordinates: $x=0.3827$ $y=0.3759$ $u(u')=0.2269$ $v=0.3344$ $v'=0.5016$
 CCT: $T_c=3932K$ ($duv=-0.00104$) Color Ratio: $R=0.189$ $G=0.776$ $B=0.035$
 Peak Wavelength: 453.9nm Half Bandwidth: 19.1nm
 Dominant Wavelength: 579.9nm Color Purity: 0.277
 CRI: $R_a=83.9$



Plant Optical Param

$ \mu_v(lm): 3075.30$	$Q_v(lm.s): 3075.30$
$ \mu_e, \dot{E}(W/nm): 9.28$	$Q_e(J): 9.28$
$ \mu_e(W): 9.13$	$ \mu_{fr}(W): 0.16$
$ \zeta_e: 0.40$	$ \zeta_{fr}: 0.01$
$PPE(umol/s/w): 1.88$	$K_{fr}: 0.04$
$Erb_Ratio: 1.50$	$PPF(umol/s): 42.82$
$PF_{uv}(360-400)(umol/s): 0.00$	$PPF(400-500)(umol/s): 7.53$
$PPF(500-600)(umol/s): 19.71$	$PPF(600-700)(umol/s): 15.57$
$PPF_r(700-800)(umol/s): 0.92$	$PPF.t(umol): 42.82$
$ \mu_{ch-A.t}(J): 0.71$	$ \mu_{ch-A}(W): 0.71$
$ \mu_{ch-B.t}(J): 0.43$	$ \mu_{ch-B}(W): 0.43$
$ \mu_b.t(J): 1.95$	$ \mu_b(W): 1.95$
$ \mu_y.t(J): 4.26$	$ \mu_y(W): 4.26$
$ \mu_r.t(J): 2.99$	$ \mu_r(W): 2.99$

Electric Parameters

Voltage: 230.80V	Current: 0.1060A	Power: 22.83W
Power Factor: 0.9270	Frequency: 49.99Hz	

Condition: $T_x: 19.6^\circ C$, $T_i: 0.0^\circ C$, R.H.: 60%
 Test Lab:
 Operator: CRE

Test Device: Lisun LMS-9000B
 Test Time: 2021-01-22 11:37:19
 Inspector: