

Lightsource Test Report

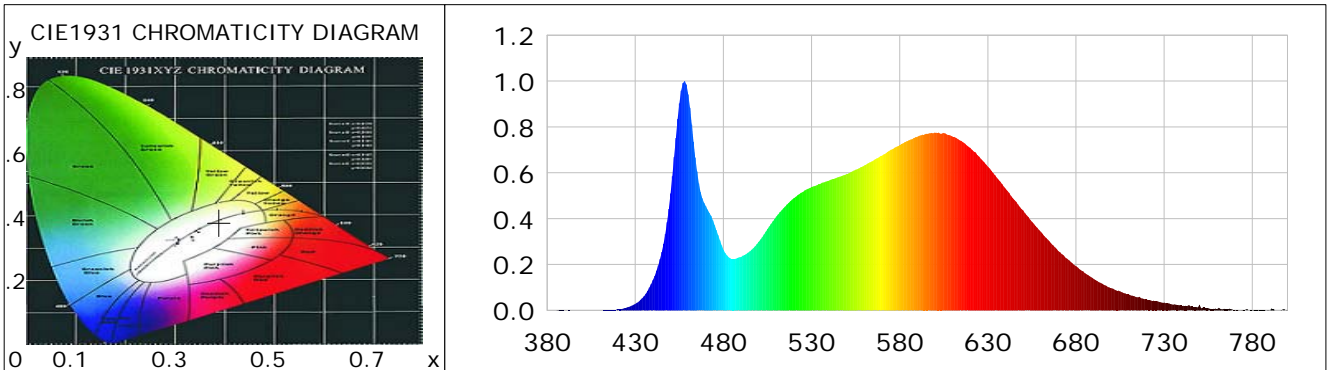
Product Information

Product Category: LED-Röhre
 Product Spec: LEDtube-120-8NWM-20W-SCE-24
 Manufacturer: METOLIGHT
 Buyer: 4624-20834

Product Type: LED-Röhre-SCE
 Product Number: 2
 Submitted Unit: 105019

CIE Colorimetric Parameters

Chromaticity coordinates: $x=0.3888$ $y=0.3806$ $u(u')=0.2291$ $v=0.3363$ $v'=0.5045$
 CCT: $T_c=3808K$ ($duv=-0.00058$) Color Ratio: $R=0.195$ $G=0.767$ $B=0.038$
 Peak Wavelength: 457.9nm Half Bandwidth: 17.7nm
 Dominant Wavelength: 580.1nm Color Purity: 0.309
 CRI: $R_a=85.2$, $avgR(1\sim14)=79.5$, $avgR(1\sim15)=79.5$ TM30: $R_f=83$, $R_g=93$
 GAI: $GAI_BB_8=92.5$, $GAI_BB_15=101.5$, $GAI_EES=70.0$
 R1 =85 R2 =94 R3 =96 R4 =82 R5 =84 R6 =90 R7 =85 R8 =67
 R9 =22 R10=83 R11=81 R12=60 R13=88 R14=99 R15=80
 Color Quality Scale: $Q_a=83.7$, $Q_f=83.9$, $Q_p=83.0$, $Q_g=92.3$
 Q1 =81 Q2 =96 Q3 =82 Q4 =75 Q5 =79 Q6 =81 Q7 =86 Q8 =89
 Q9 =98 Q10=92 Q11=88 Q12=87 Q13=86 Q14=77 Q15=79



Photometric Parameters

Luminous Flux: 2139.3 lm Efficiency: 119.05 lm/W Radiant Power: 6.509 W
 Total mains efficacy: 140.00 lm/W Energy Efficiency Class: D (EU 2019/2015)
 Pupil Flux: 3204.27 Plm Pupil Lumens Per Watt: 178.31 Plm/W Pupil Factor (Kp): 1.498
 Circopic Flux: 6568.20 lm

Electric Parameters

Voltage: 23.700V Current: 1.0340A Power: 17.97W
 Power Factor: 0.7300 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: 44610 (3048) CCD Integration Time: 126.08 ms

Lightsource Test Report

Product Information

Product Category: LED-Röhre
 Product Spec: LEDtube-120-8NWM-20W-SCE-24
 Manufacturer: METOLIGHT
 Buyer: 4624-20834

Product Type: LED-Röhre-SCE
 Product Number: 2
 Submitted Unit: 105019

WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0009	0.0430	525	0.5160	25.2383	670	0.2588	12.6581
385	0.0006	0.0296	530	0.5381	26.3178	675	0.2250	11.0058
390	0.0005	0.0235	535	0.5518	26.9887	680	0.1931	9.4436
395	0.0005	0.0225	540	0.5664	27.7031	685	0.1622	7.9349
400	0.0006	0.0300	545	0.5803	28.3806	690	0.1370	6.7009
405	0.0001	0.0060	550	0.5952	29.1105	695	0.1158	5.6640
410	0.0004	0.0204	555	0.6132	29.9941	700	0.0970	4.7452
415	0.0016	0.0786	560	0.6322	30.9186	705	0.0824	4.0291
420	0.0042	0.2069	565	0.6534	31.9572	710	0.0696	3.4030
425	0.0112	0.5495	570	0.6752	33.0258	715	0.0571	2.7923
430	0.0282	1.3817	575	0.7003	34.2520	720	0.0477	2.3342
435	0.0621	3.0366	580	0.7207	35.2480	725	0.0401	1.9616
440	0.1316	6.4378	585	0.7413	36.2587	730	0.0344	1.6807
445	0.2544	12.4412	590	0.7571	37.0320	735	0.0245	1.1985
450	0.5103	24.9571	595	0.7704	37.6793	740	0.0211	1.0330
455	0.9031	44.1715	600	0.7760	37.9529	745	0.0170	0.8326
460	0.9421	46.0799	605	0.7735	37.8316	750	0.0238	1.1620
465	0.6062	29.6475	610	0.7577	37.0571	755	0.0096	0.4699
470	0.4549	22.2473	615	0.7388	36.1347	760	0.0057	0.2799
475	0.3715	18.1683	620	0.7090	34.6771	765	0.0060	0.2938
480	0.2650	12.9613	625	0.6703	32.7829	770	0.0034	0.1680
485	0.2235	10.9321	630	0.6267	30.6521	775	0.0037	0.1789
490	0.2328	11.3850	635	0.5789	28.3153	780	0.0024	0.1171
495	0.2575	12.5939	640	0.5309	25.9676	785	0.0034	0.1639
500	0.2993	14.6383	645	0.4818	23.5667	790	0.0008	0.0409
505	0.3550	17.3625	650	0.4360	21.3251	795	0.0006	0.0296
510	0.4097	20.0388	655	0.3861	18.8865	800	0.0026	0.1254
515	0.4524	22.1271	660	0.3428	16.7674			
520	0.4901	23.9684	665	0.3005	14.6954			

Condition: Tx:27.4'C, Ti:0.0'C, R.H.:60%
 Test Lab: Asmetec GmbH
 Operator: CRE

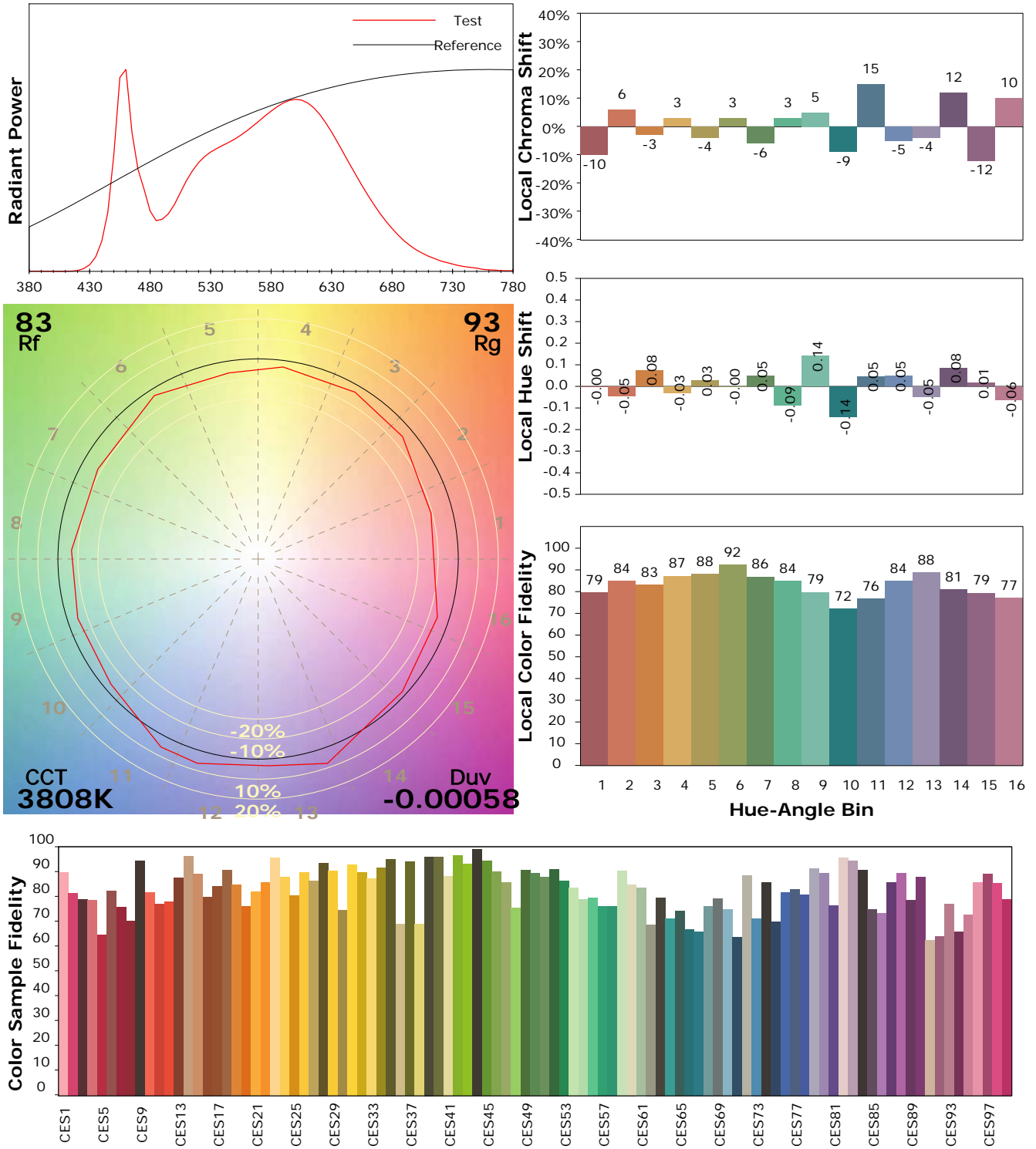
Test Device: Lisun LMS-9000B
 Test Time: 2020-11-11 12:35:49
 Inspector:

IES TM-30-18 Color Rendition Report

Product Information

Product Category: LED-Röhre
 Product Spec: LEDtube-120-8NWM-20W-SCE-24
 Manufacturer: METOLIGHT
 Buyer: 4624-20834

Product Type: LED-Röhre-SCE
 Product Number: 2
 Submitted Unit: 105019



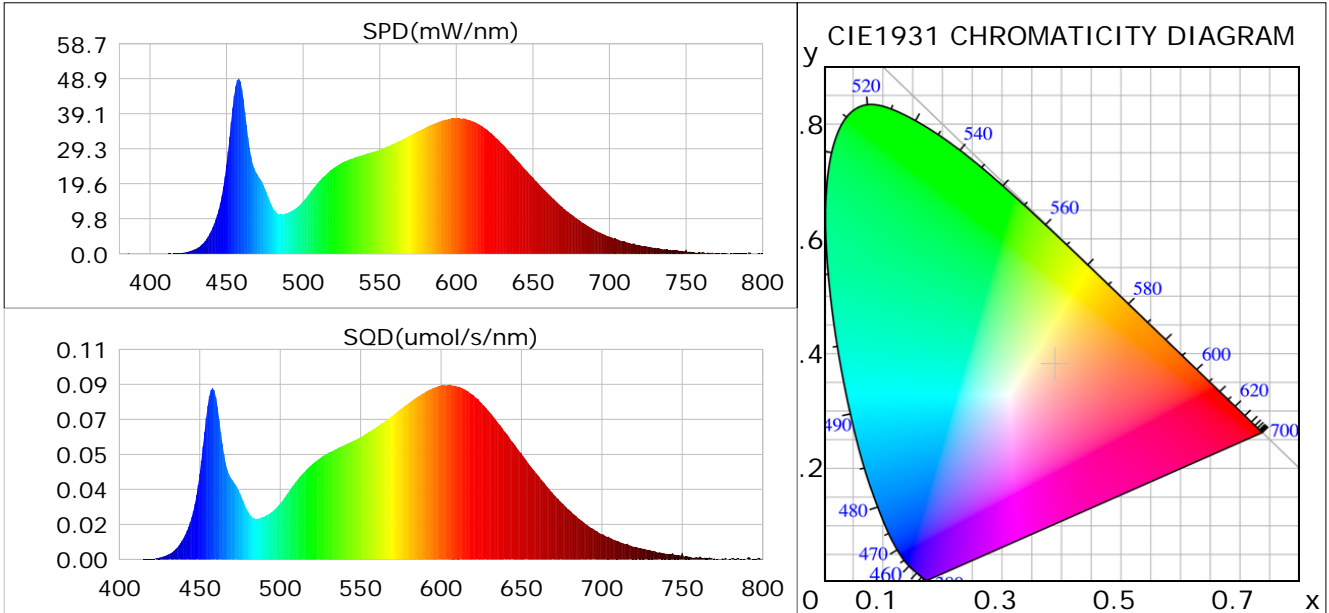
Condition: Tx:27.4°C, Ti:0.0°C, R.H.:60%
 Test Lab: Asmetec GmbH
 Operator: CRE

Test Device: Lisun LMS-9000B
 Test Time: 2020-11-11 12:35:49
 Inspector:

Plant optical param data

CIE Colorimetric Parameters

Chromaticity coordinates: $x=0.3888$ $y=0.3806$ $u(u')=0.2291$ $v=0.3363$ $v'=0.5045$
 CCT: $T_c=3808K$ ($duv=-0.00058$) Color Ratio: $R=0.195$ $G=0.767$ $B=0.038$
 Peak Wavelength: 457.9nm Half Bandwidth: 17.7nm
 Dominant Wavelength: 580.1nm Color Purity: 0.309
 CRI: $R_a=85.2$



Plant Optical Param

$ \mu_v(lm): 2139.30$	$Q_v(lm.s): 2139.30$
$ \mu_e, \dot{E}(W/nm): 6.51$	$Q_e(J): 6.51$
$ \mu_e(W): 6.39$	$ \mu_{fr}(W): 0.12$
$ \zeta_e: 0.36$	$ \zeta_{fr}: 0.01$
$PPE(umol/s/w): 1.68$	$K_{fr}: 0.04$
$Erb_Ratio: 1.62$	$PPF(umol/s): 30.13$
$PF_{uv}(360-400)(umol/s): 0.00$	$PPF(400-500)(umol/s): 5.17$
$PPF(500-600)(umol/s): 13.54$	$PPF(600-700)(umol/s): 11.42$
$PPF_{fr}(700-800)(umol/s): 0.72$	$PPF.t(umol): 30.13$
$ \mu_{ch-A.t}(J): 0.48$	$ \mu_{ch-A}(W): 0.48$
$ \mu_{ch-B.t}(J): 0.31$	$ \mu_{ch-B}(W): 0.31$
$ \mu_b.t(J): 1.33$	$ \mu_b(W): 1.33$
$ \mu_y.t(J): 2.93$	$ \mu_y(W): 2.93$
$ \mu_r.t(J): 2.19$	$ \mu_r(W): 2.19$

Electric Parameters

Voltage: 23.700V	Current: 1.0340A	Power: 17.97W
Power Factor: 0.7300	Frequency: 49.99Hz	

Condition: $T_x: 27.4^\circ C$, $T_i: 0.0^\circ C$, R.H.: 60%
 Test Lab: Asmetec GmbH
 Operator: CRE

Test Device: Lisun LMS-9000B
 Test Time: 2020-11-11 12:35:49
 Inspector: