

Lightsource Test Report

Product Information

Product Category: LED-Röhre
 Product Spec: LEDtube-028-5CWM-5W-DC
 Manufacturer: METOLIGHT
 Buyer: 7709

Product Type: LED-Röhre-TRF
 Product Number: 1
 Submitted Unit: 105254

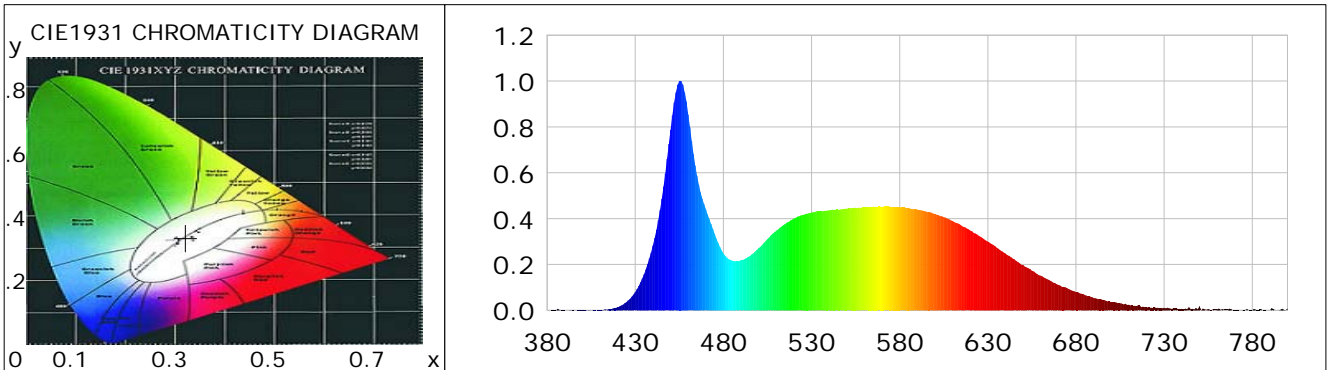
CIE Colorimetric Parameters

Chromaticity coordinates: $x=0.3211$ $y=0.3326$ $u(u')=0.2023$ $v=0.3143$ $v'=0.4714$
 CCT: $T_c=6050K$ ($duv=0.00090$) Color Ratio: $R=0.145$ $G=0.799$ $B=0.056$
 Peak Wavelength: 455.6nm Half Bandwidth: 22.3nm
 Dominant Wavelength: 490.9nm Color Purity: 0.042
 CRI: $R_a=84.9$, $avgR(1\sim14)=78.4$, $avgR(1\sim15)=78.6$ TM30: $R_f=82$, $R_g=94$
 GAI: $GAI_BB_8=92.2$, $GAI_BB_15=98.1$, $GAI_EES=87.9$

R1 =84	R2 =91	R3 =93	R4 =83	R5 =84	R6 =85	R7 =88	R8 =72
R9 =20	R10=77	R11=82	R12=57	R13=87	R14=96	R15=81	

Color Quality Scale: $Q_a=81.2$, $Q_f=81.1$, $Q_p=81.6$, $Q_g=92.1$

Q1 =83	Q2 =99	Q3 =77	Q4 =69	Q5 =76	Q6 =79	Q7 =86	Q8 =90
Q9 =96	Q10=87	Q11=82	Q12=82	Q13=83	Q14=74	Q15=78	



Photometric Parameters

Luminous Flux: 659.00 lm Efficiency: 124.34 lm/W Radiant Power: 2.106 W
 Total mains efficacy: 135.41 lm/W Energy Efficiency Class: D (EU 2019/2015)
 Pupil Flux: 1217.49 Plm Pupil Lumens Per Watt: 229.71 Plm/W Pupil Factor (Kp): 1.847
 Circopic Flux: 2796.89 lm

Electric Parameters

Voltage: 230.00V Current: 0.0230A Power: 5.30W
 Power Factor: 0.9450 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: 46459 (2542) CCD Integration Time: 395.67 ms

Lightsource Test Report

Product Information

Product Category: LED-Röhre
 Product Spec: LEDtube-028-5CWM-5W-DC
 Manufacturer: METOLIGHT
 Buyer: 7709

Product Type: LED-Röhre-TRF
 Product Number: 1
 Submitted Unit: 105254

WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0010	0.0220	525	0.4166	9.2718	670	0.1113	2.4774
385	0.0011	0.0244	530	0.4270	9.5045	675	0.0969	2.1563
390	0.0009	0.0194	535	0.4315	9.6046	680	0.0796	1.7719
395	0.0008	0.0167	540	0.4367	9.7187	685	0.0669	1.4885
400	0.0011	0.0238	545	0.4403	9.7988	690	0.0544	1.2110
405	0.0006	0.0124	550	0.4435	9.8718	695	0.0459	1.0212
410	0.0027	0.0594	555	0.4478	9.9667	700	0.0347	0.7731
415	0.0057	0.1265	560	0.4487	9.9857	705	0.0311	0.6920
420	0.0143	0.3191	565	0.4519	10.0576	710	0.0247	0.5503
425	0.0359	0.7986	570	0.4523	10.0674	715	0.0213	0.4734
430	0.0802	1.7844	575	0.4520	10.0606	720	0.0144	0.3201
435	0.1571	3.4969	580	0.4497	10.0096	725	0.0124	0.2750
440	0.2822	6.2818	585	0.4466	9.9408	730	0.0110	0.2439
445	0.4869	10.8368	590	0.4399	9.7902	735	0.0080	0.1780
450	0.7872	17.5207	595	0.4314	9.6005	740	0.0064	0.1429
455	0.9991	22.2366	600	0.4205	9.3598	745	0.0061	0.1363
460	0.8549	19.0265	605	0.4066	9.0492	750	0.0176	0.3911
465	0.5877	13.0802	610	0.3900	8.6797	755	0.0059	0.1306
470	0.4416	9.8296	615	0.3703	8.2417	760	0.0044	0.0972
475	0.3342	7.4389	620	0.3484	7.7543	765	0.0039	0.0875
480	0.2484	5.5294	625	0.3240	7.2102	770	0.0017	0.0369
485	0.2165	4.8196	630	0.2997	6.6705	775	0.0024	0.0529
490	0.2186	4.8659	635	0.2735	6.0883	780	0.0015	0.0343
495	0.2367	5.2672	640	0.2476	5.5103	785	0.0046	0.1022
500	0.2717	6.0479	645	0.2228	4.9590	790	0.0009	0.0204
505	0.3108	6.9184	650	0.1976	4.3984	795	0.0010	0.0217
510	0.3482	7.7506	655	0.1730	3.8497	800	0.0093	0.2065
515	0.3767	8.3844	660	0.1509	3.3577			
520	0.3994	8.8882	665	0.1309	2.9137			

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

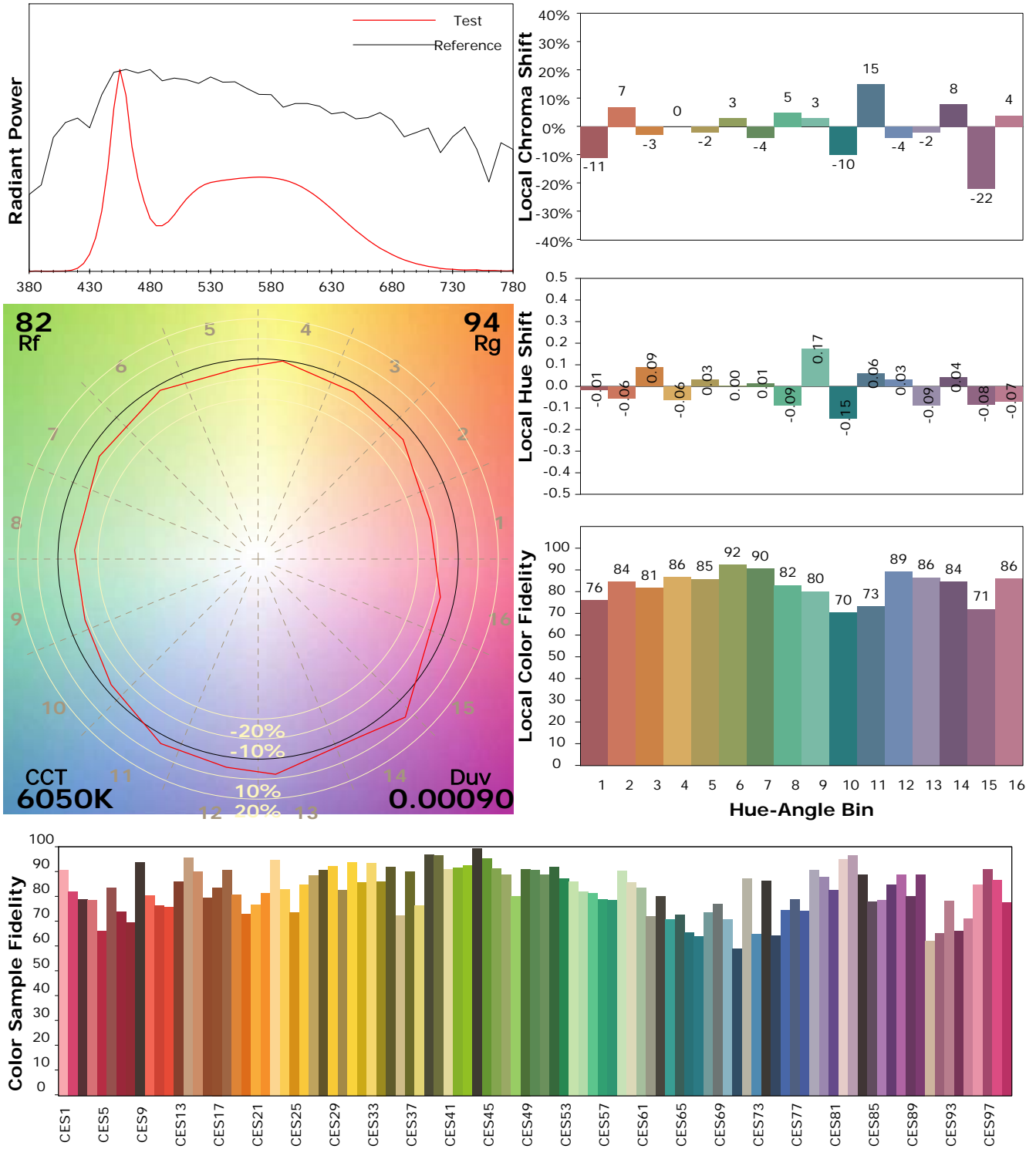
Test Device: Lisun LMS-9000B
 Test Time: 2021-03-08 10:30:20
 Inspector:

IES TM-30-18 Color Rendition Report

Product Information

Product Category: LED-Röhre
 Product Spec: LEDtube-028-5CWM-5W-DC
 Manufacturer: METOLIGHT
 Buyer: 7709

Product Type: LED-Röhre-TRF
 Product Number: 1
 Submitted Unit: 105254



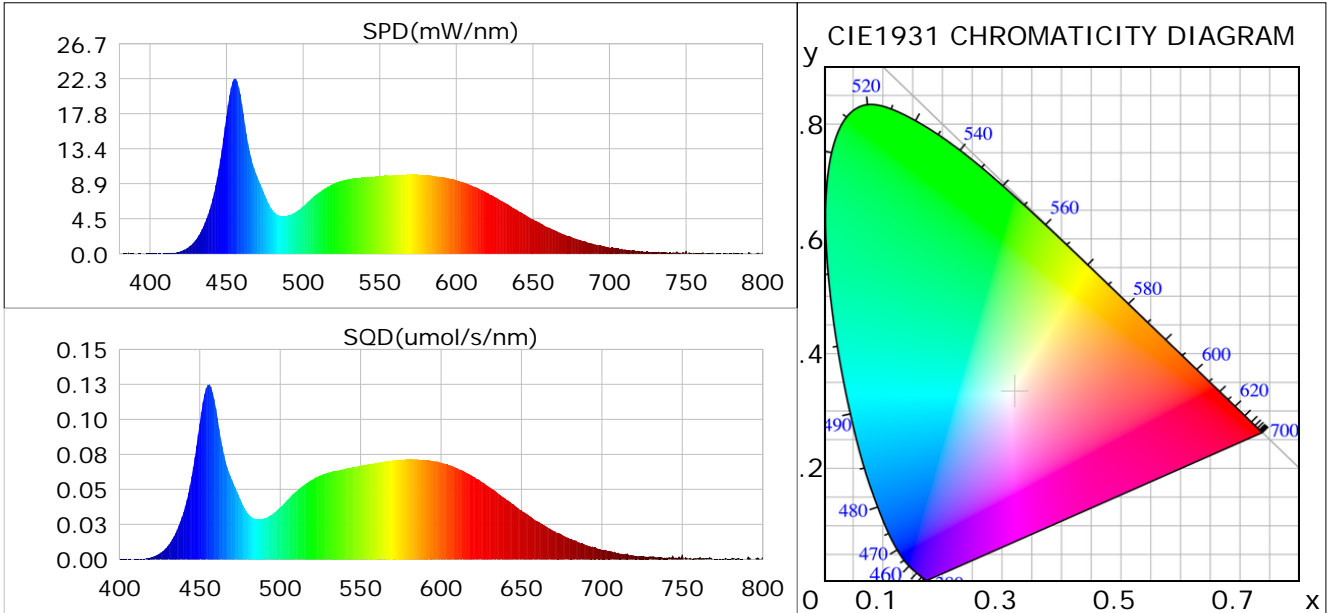
Condition: Tx:0.0°C, Ti:0.0°C, R.H.: 60%
 Test Lab:
 Operator: CRE

Test Device: Lisun LMS-9000B
 Test Time: 2021-03-08 10:30:20
 Inspector:

Plant optical param data

CIE Colorimetric Parameters

Chromaticity coordinates: $x=0.3211$ $y=0.3326$ $u(u')=0.2023$ $v=0.3143$ $v'=0.4714$
 CCT: $T_c=6050K$ ($duv=0.00090$) Color Ratio: $R=0.145$ $G=0.799$ $B=0.056$
 Peak Wavelength: 455.6nm Half Bandwidth: 22.3nm
 Dominant Wavelength: 490.9nm Color Purity: 0.042
 CRI: $R_a=84.9$



Plant Optical Param

$ \mu_v(lm): 659.00$	$Q_v(lm.s): 659.00$
$ \mu_e, \dot{E}(W/nm): 2.11$	$Q_e(J): 2.11$
$ \mu_e(W): 2.09$	$ \mu_{fr}(W): 0.02$
$ \zeta_e: 0.39$	$ \zeta_{fr}: 0.00$
$PPE(umol/s/w): 1.78$	$K_{fr}: 0.02$
$Erb_Ratio: 0.68$	$PPF(umol/s): 9.43$
$PF_{uv}(360-400)(umol/s): 0.00$	$PPF(400-500)(umol/s): 2.64$
$PPF(500-600)(umol/s): 4.33$	$PPF(600-700)(umol/s): 2.46$
$PPF_{fr}(700-800)(umol/s): 0.13$	$PPF.t(umol): 9.43$
$ \mu_{ch-A.t}(J): 0.17$	$ \mu_{ch-A}(W): 0.17$
$ \mu_{ch-B.t}(J): 0.12$	$ \mu_{ch-B}(W): 0.12$
$ \mu_b.t(J): 0.68$	$ \mu_b(W): 0.68$
$ \mu_y.t(J): 0.94$	$ \mu_y(W): 0.94$
$ \mu_r.t(J): 0.47$	$ \mu_r(W): 0.47$

Electric Parameters

Voltage: 230.00V	Current: 0.0230A	Power: 5.30W
Power Factor: 0.9450	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
 Test Time: 2021-03-08 10:30:20
 Inspector: