

## Lightsource Test Report

### Product Information

Product Category: LED-Röhre  
 Product Spec: LEDtube-150-8NWC-19W-TRF-RC  
 Manufacturer: METOLIGHT  
 Buyer: 6852

Product Type: LED-Röhre-TRF  
 Product Number: 1  
 Submitted Unit: 102255

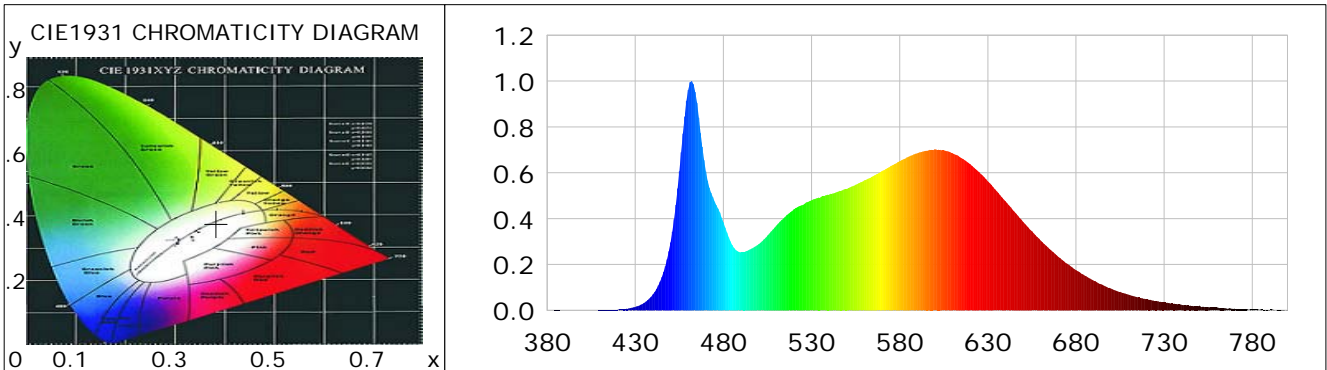
### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3831$   $y=0.3769$   $u(u')=0.2268$   $v=0.3347$   $v'=0.5021$   
 CCT:  $T_c=3930K$  ( $duv=-0.00068$ ) Color Ratio:  $R=0.194$   $G=0.759$   $B=0.046$   
 Peak Wavelength: 461.8nm Half Bandwidth: 20.1nm  
 Dominant Wavelength: 579.7nm Color Purity: 0.281  
 CRI:  $R_a=85.6$ ,  $avgR(1\sim14)=81.0$ ,  $avgR(1\sim15)=81.1$  TM30:  $R_f=81$ ,  $R_g=90$   
 GAI:  $GAI\_BB\_8=90.2$ ,  $GAI\_BB\_15=99.3$ ,  $GAI\_EES=70.1$   

R1 =88	R2 =98	R3 =93	R4 =79	R5 =85	R6 =93	R7 =81	R8 =67
R9 =27	R10=92	R11=79	R12=62	R13=91	R14=97	R15=82	

Color Quality Scale:  $Q_a=83.6$ ,  $Q_f=83.9$ ,  $Q_p=82.0$ ,  $Q_g=90.1$   

Q1 =78	Q2 =92	Q3 =87	Q4 =76	Q5 =76	Q6 =77	Q7 =84	Q8 =90
Q9 =97	Q10=96	Q11=91	Q12=89	Q13=88	Q14=79	Q15=79	



### Photometric Parameters

Luminous Flux: 2710.4 lm Efficiency: 146.98 lm/W Radiant Power: 8.414 W  
 Total mains efficacy: 172.85 lm/W Energy Efficiency Class: C (EU 2019/2015)  
 Pupil Flux: 4257.43 Plm Pupil Lumens Per Watt: 230.88 Plm/W Pupil Factor (Kp): 1.571  
 Circopic Flux: 9092.64 lm

### Electric Parameters

Voltage: 230.80V Current: 0.0790A Power: 18.44W  
 Power Factor: 0.9590 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: 44959 (2334) CCD Integration Time: 71.86 ms

Condition: Tx:19.7'C, Ti:0.0'C, R.H.:60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-02-19 11:59:08  
 Inspector:

## Lightsource Test Report

### Product Information

Product Category: LED-Röhre  
 Product Spec: LEDtube-150-8NWC-19W-TRF-RC  
 Manufacturer: METOLIGHT  
 Buyer: 6852

Product Type: LED-Röhre-TRF  
 Product Number: 1  
 Submitted Unit: 102255

WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0006	0.0443	525	0.4595	31.3943	670	0.2336	15.9628
385	0.0009	0.0622	530	0.4802	32.8073	675	0.2037	13.9155
390	0.0006	0.0422	535	0.4926	33.6574	680	0.1756	12.0002
395	0.0004	0.0286	540	0.5049	34.4950	685	0.1511	10.3241
400	0.0006	0.0401	545	0.5175	35.3572	690	0.1297	8.8642
405	0.0006	0.0428	550	0.5298	36.2011	695	0.1115	7.6151
410	0.0009	0.0635	555	0.5479	37.4344	700	0.0944	6.4521
415	0.0022	0.1524	560	0.5672	38.7526	705	0.0809	5.5274
420	0.0034	0.2314	565	0.5861	40.0435	710	0.0681	4.6563
425	0.0070	0.4777	570	0.6082	41.5539	715	0.0569	3.8862
430	0.0153	1.0481	575	0.6298	43.0327	720	0.0480	3.2809
435	0.0321	2.1950	580	0.6512	44.4920	725	0.0400	2.7317
440	0.0692	4.7309	585	0.6695	45.7419	730	0.0354	2.4173
445	0.1452	9.9201	590	0.6853	46.8253	735	0.0299	2.0416
450	0.2967	20.2692	595	0.6964	47.5813	740	0.0238	1.6261
455	0.6072	41.4858	600	0.7023	47.9874	745	0.0203	1.3859
460	0.9610	65.6613	605	0.6984	47.7183	750	0.0205	1.4031
465	0.9050	61.8351	610	0.6849	46.7954	755	0.0147	1.0010
470	0.6064	41.4349	615	0.6646	45.4056	760	0.0129	0.8802
475	0.4746	32.4267	620	0.6376	43.5645	765	0.0086	0.5910
480	0.3845	26.2694	625	0.6029	41.1953	770	0.0076	0.5190
485	0.2850	19.4753	630	0.5624	38.4253	775	0.0053	0.3632
490	0.2527	17.2668	635	0.5195	35.4966	780	0.0048	0.3291
495	0.2654	18.1333	640	0.4756	32.4933	785	0.0047	0.3178
500	0.2890	19.7435	645	0.4307	29.4304	790	0.0036	0.2436
505	0.3264	22.3002	650	0.3859	26.3698	795	0.0024	0.1667
510	0.3697	25.2579	655	0.3453	23.5946	800	0.0032	0.2174
515	0.4078	27.8652	660	0.3042	20.7858			
520	0.4407	30.1127	665	0.2675	18.2754			

Condition: Tx: 19.7°C, Ti: 0.0°C, R.H.: 60%  
 Test Lab:  
 Operator: CRE

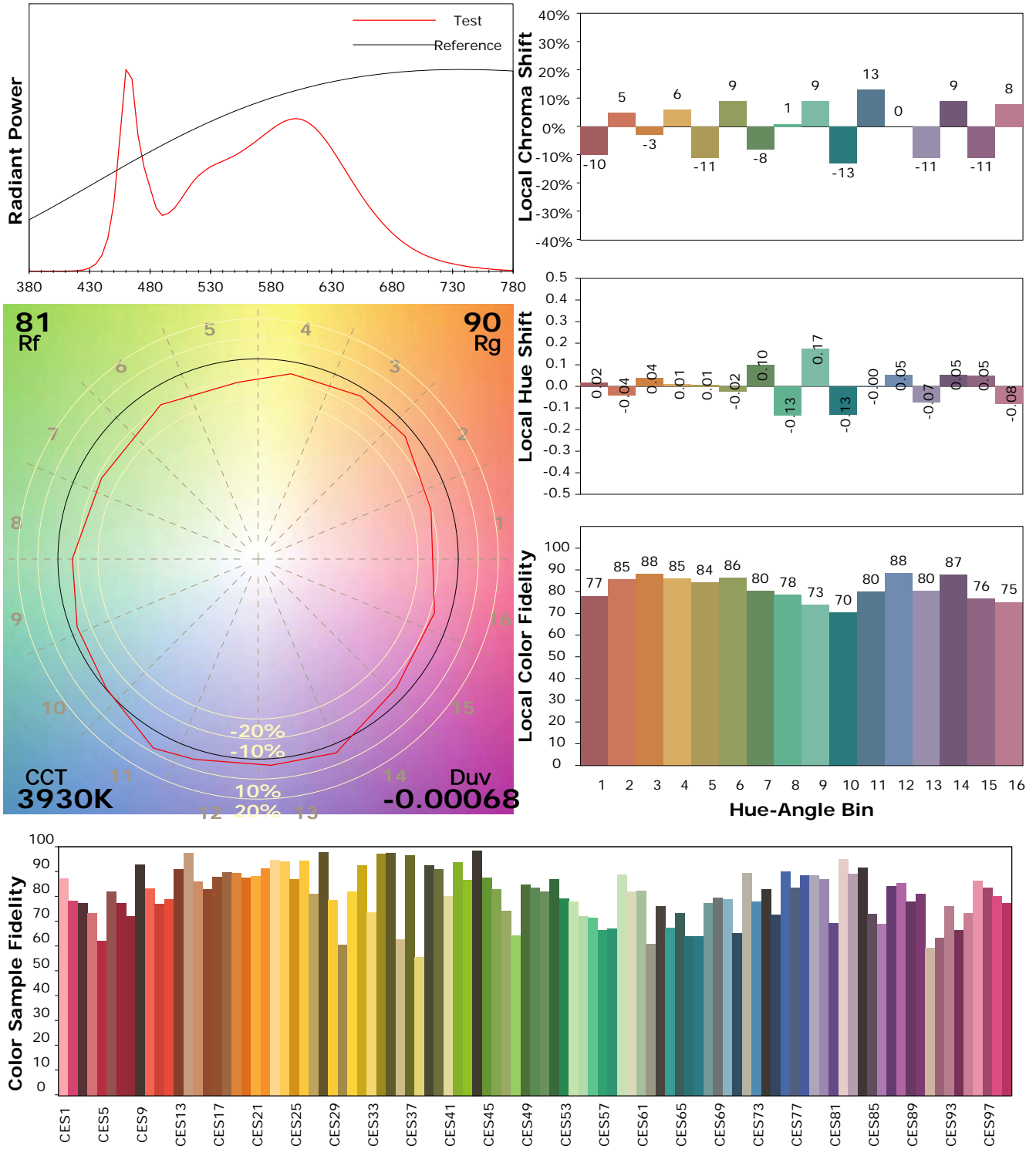
Test Device: Lisun LMS-9000B  
 Test Time: 2021-02-19 11:59:08  
 Inspector:

## IES TM-30-18 Color Rendition Report

### Product Information

Product Category: LED-Röhre  
 Product Spec: LEDtube-150-8NWC-19W-TRF-RC  
 Manufacturer: METOLIGHT  
 Buyer: 6852

Product Type: LED-Röhre-TRF  
 Product Number: 1  
 Submitted Unit: 102255



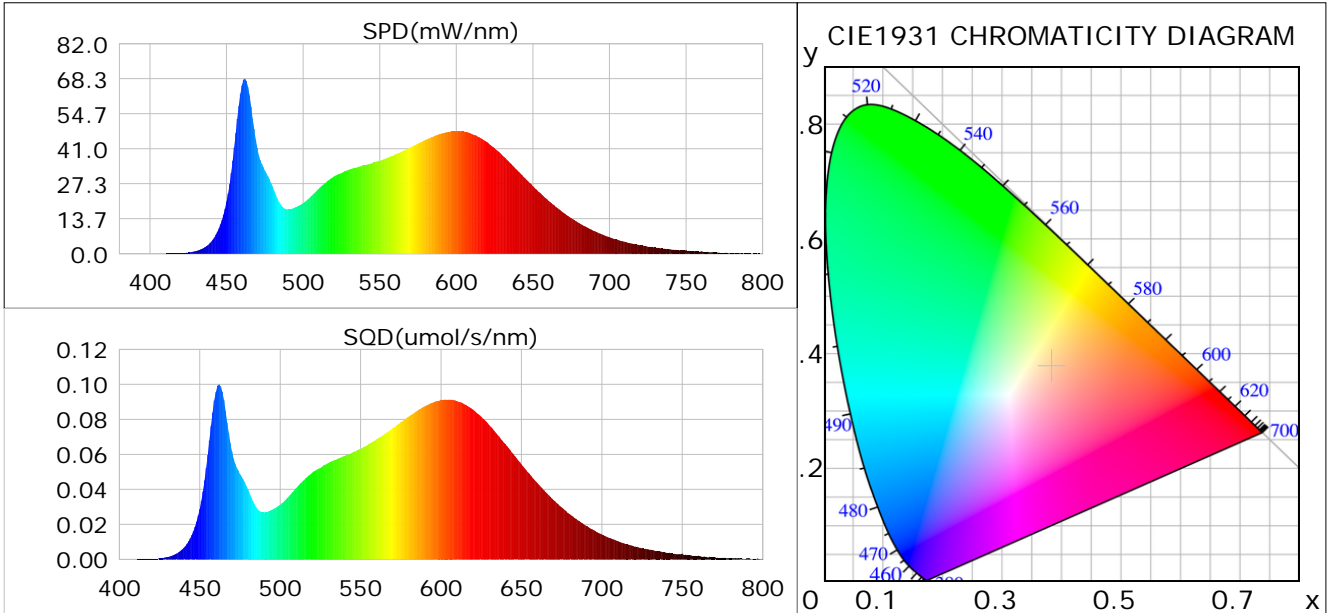
Condition: Tx: 19.7°C, Ti: 0.0°C, R.H.: 60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-02-19 11:59:08  
 Inspector:

## Plant optical param data

### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3831$   $y=0.3769$   $u(u')=0.2268$   $v=0.3347$   $v'=0.5021$   
 CCT:  $T_c=3930K$  ( $duv=-0.00068$ ) Color Ratio:  $R=0.194$   $G=0.759$   $B=0.046$   
 Peak Wavelength: 461.8nm Half Bandwidth: 20.1nm  
 Dominant Wavelength: 579.7nm Color Purity: 0.281  
 CRI:  $R_a=85.6$



### Plant Optical Param

$ \mu_v(lm)$ : 2710.40	$Q_v(lm.s)$ : 2710.40
$ \mu_e, \dot{E}(W/nm)$ : 8.41	$Q_e(J)$ : 8.41
$ \mu_e(W)$ : 8.24	$ \mu_{fr}(W)$ : 0.18
$ \zeta_e$ : 0.45	$ \zeta_{fr}$ : 0.01
PPE(umol/s/w): 2.10	Kfr: 0.06
Erb_Ratio: 1.44	PPF(umol/s): 38.73
PFuv(360-400)(umol/s): 0.00	PPF(400-500)(umol/s): 7.33
PPF(500-600)(umol/s): 17.02	PPF(600-700)(umol/s): 14.38
PPfr(700-800)(umol/s): 1.07	PPF.t(umol): 38.73
$ \mu_{ch-A.t}(J)$ : 0.60	$ \mu_{ch-A}(W)$ : 0.60
$ \mu_{ch-B.t}(J)$ : 0.42	$ \mu_{ch-B}(W)$ : 0.42
$ \mu_b.t(J)$ : 1.87	$ \mu_b(W)$ : 1.87
$ \mu_y.t(J)$ : 3.68	$ \mu_y(W)$ : 3.68
$ \mu_r.t(J)$ : 2.75	$ \mu_r(W)$ : 2.75

### Electric Parameters

Voltage: 230.80V	Current: 0.0790A	Power: 18.44W
Power Factor: 0.9590	Frequency: 49.99Hz	

Condition: Tx: 19.7°C, Ti: 0.0°C, R.H.: 60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-02-19 11:59:08  
 Inspector: