

## Lightsource Test Report

### Product Information

Product Category: LED-Röhre  
 Product Spec: Ledtube-120-8CWM-20W-ECO  
 Manufacturer: METOLIGHT  
 Buyer: 6361

Product Type: LED-Röhre-ECO  
 Product Number: 1  
 Submitted Unit: 103488

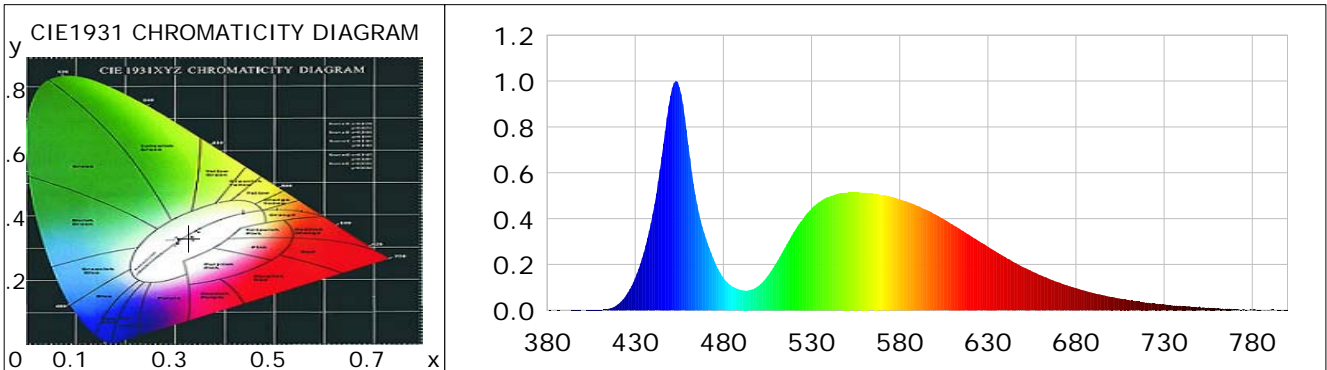
### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3276$   $y=0.3315$   $u(u')=0.2073$   $v=0.3146$   $v'=0.4719$   
 CCT:  $T_c=5726K$  ( $duv=-0.00278$ ) Color Ratio:  $R=0.137$   $G=0.824$   $B=0.039$   
 Peak Wavelength: 453.2nm Half Bandwidth: 22.3nm  
 Dominant Wavelength: 487.6nm Color Purity: 0.020  
 CRI:  $R_a=73.7$ ,  $avgR(1\sim14)=64.2$ ,  $avgR(1\sim15)=64.7$  TM30:  $R_f=71$ ,  $R_g=93$   
 GAI:  $GAI\_BB\_8=91.6$ ,  $GAI\_BB\_15=98.8$ ,  $GAI\_EES=85.6$   

R1 =73	R2 =79	R3 =78	R4 =73	R5 =72	R6 =68	R7 =84	R8 =64
R9 =0	R10=45	R11=66	R12=37	R13=74	R14=87	R15=72	

Color Quality Scale:  $Q_a=68.2$ ,  $Q_f=67.0$ ,  $Q_p=71.8$ ,  $Q_g=90.2$   

Q1 =83	Q2 =94	Q3 =58	Q4 =47	Q5 =60	Q6 =67	Q7 =76	Q8 =85
Q9 =87	Q10=71	Q11=63	Q12=65	Q13=70	Q14=63	Q15=71	



### Photometric Parameters

Luminous Flux: 2160.5 lm	Efficiency: 108.35 lm/W	Radiant Power: 6.732 W
Total mains efficacy: 127.42 lm/W	Energy Efficiency Class: E (EU 2019/2015)	
Pupil Flux: 3570.57 Plm	Pupil Lumens Per Watt: 179.07 Plm/W	Pupil Factor (Kp): 1.653
Cirtopic Flux: 7649.99 lm		

### Electric Parameters

Voltage: 230.20V	Current: 0.0910A	Power: 19.94W
Power Factor: 0.9480	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: 46396 (2335)	CCD Integration Time: 97.96 ms

Condition: Tx:19.1'C, Ti:0.0'C, R.H.:60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-01-22 11:17:49  
 Inspector:

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WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0003	0.0243	525	0.3970	28.6091	670	0.1222	8.8049
385	0.0003	0.0239	530	0.4440	31.9972	675	0.1089	7.8500
390	0.0005	0.0374	535	0.4754	34.2561	680	0.0973	7.0145
395	0.0009	0.0657	540	0.4951	35.6748	685	0.0857	6.1722
400	0.0006	0.0465	545	0.5083	36.6287	690	0.0754	5.4357
405	0.0008	0.0561	550	0.5133	36.9862	695	0.0666	4.7994
410	0.0020	0.1448	555	0.5162	37.1993	700	0.0581	4.1833
415	0.0072	0.5197	560	0.5135	37.0066	705	0.0516	3.7153
420	0.0252	1.8158	565	0.5098	36.7353	710	0.0452	3.2578
425	0.0682	4.9145	570	0.5030	36.2510	715	0.0395	2.8479
430	0.1415	10.1939	575	0.4956	35.7141	720	0.0340	2.4511
435	0.2538	18.2905	580	0.4843	34.8986	725	0.0297	2.1380
440	0.4220	30.4069	585	0.4710	33.9391	730	0.0259	1.8678
445	0.6706	48.3270	590	0.4554	32.8180	735	0.0206	1.4820
450	0.9360	67.4503	595	0.4386	31.6043	740	0.0181	1.3018
455	0.9744	70.2141	600	0.4195	30.2290	745	0.0160	1.1541
460	0.7227	52.0784	605	0.3974	28.6376	750	0.0169	1.2144
465	0.4639	33.4266	610	0.3743	26.9741	755	0.0120	0.8665
470	0.3153	22.7229	615	0.3504	25.2490	760	0.0080	0.5770
475	0.2123	15.3019	620	0.3261	23.4997	765	0.0076	0.5513
480	0.1422	10.2478	625	0.3012	21.7044	770	0.0055	0.3946
485	0.1045	7.5270	630	0.2775	19.9979	775	0.0049	0.3535
490	0.0891	6.4216	635	0.2536	18.2738	780	0.0029	0.2074
495	0.0883	6.3651	640	0.2315	16.6794	785	0.0027	0.1915
500	0.1074	7.7360	645	0.2092	15.0749	790	0.0020	0.1416
505	0.1491	10.7422	650	0.1884	13.5798	795	0.0016	0.1175
510	0.2070	14.9184	655	0.1703	12.2734	800	0.0035	0.2492
515	0.2740	19.7474	660	0.1535	11.0584			
520	0.3418	24.6297	665	0.1365	9.8363			

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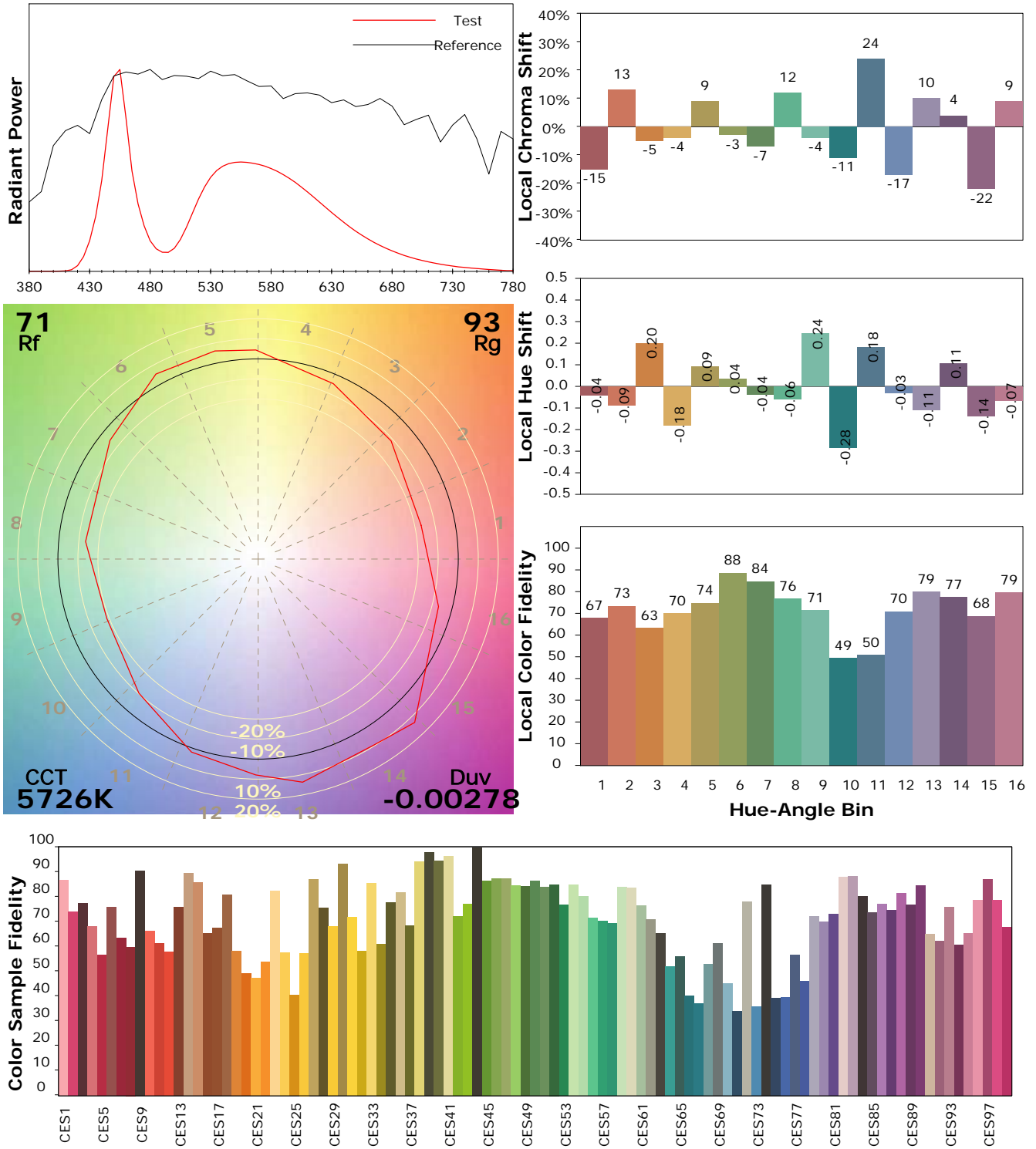
Test Device: Lisun LMS-9000B  
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## IES TM-30-18 Color Rendition Report

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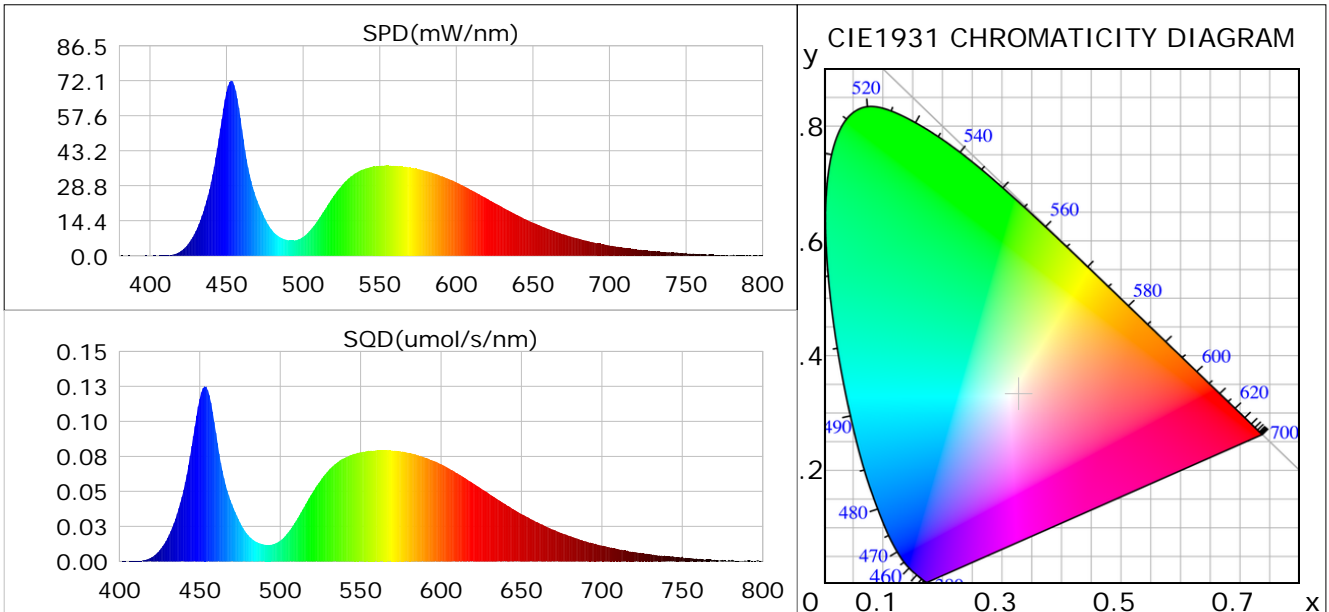
Condition: Tx: 19.1°C, Ti: 0.0°C, R.H.: 60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
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 Inspector:

## Plant optical param data

### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3276$   $y=0.3315$   $u(u')=0.2073$   $v=0.3146$   $v'=0.4719$   
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 Peak Wavelength: 453.2nm Half Bandwidth: 22.3nm  
 Dominant Wavelength: 487.6nm Color Purity: 0.020  
 CRI:  $R_a=73.7$



### Plant Optical Param

$ \mu_v(lm)$ : 2160.50	$Q_v(lm.s)$ : 2160.50
$ \mu_e, \dot{E}(W/nm)$ : 6.73	$Q_e(J)$ : 6.73
$ \mu_e(W)$ : 6.60	$ \mu_{fr}(W)$ : 0.14
$ \zeta_e$ : 0.33	$ \zeta_{fr}$ : 0.01
PPE(umol/s/w): 1.50	Kfr: 0.04
Erb_Ratio: 0.72	PPF(umol/s): 29.95
PFuv(360-400)(umol/s): 0.00	PPF(400-500)(umol/s): 7.83
PPF(500-600)(umol/s): 14.22	PPF(600-700)(umol/s): 7.90
PPfr(700-800)(umol/s): 0.80	PPF.t(umol): 29.95
$ \mu_{ch-A.t}(J)$ : 0.58	$ \mu_{ch-A}(W)$ : 0.58
$ \mu_{ch-B.t}(J)$ : 0.39	$ \mu_{ch-B}(W)$ : 0.39
$ \mu_b.t(J)$ : 2.06	$ \mu_b(W)$ : 2.06
$ \mu_y.t(J)$ : 3.07	$ \mu_y(W)$ : 3.07
$ \mu_r.t(J)$ : 1.52	$ \mu_r(W)$ : 1.52

### Electric Parameters

Voltage: 230.20V	Current: 0.0910A	Power: 19.94W
Power Factor: 0.9480	Frequency: 49.99Hz	

Condition:  $T_x: 19.1^\circ C$ ,  $T_i: 0.0^\circ C$ , R.H.: 60%  
 Test Lab:  
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