

## Lightsource Test Report

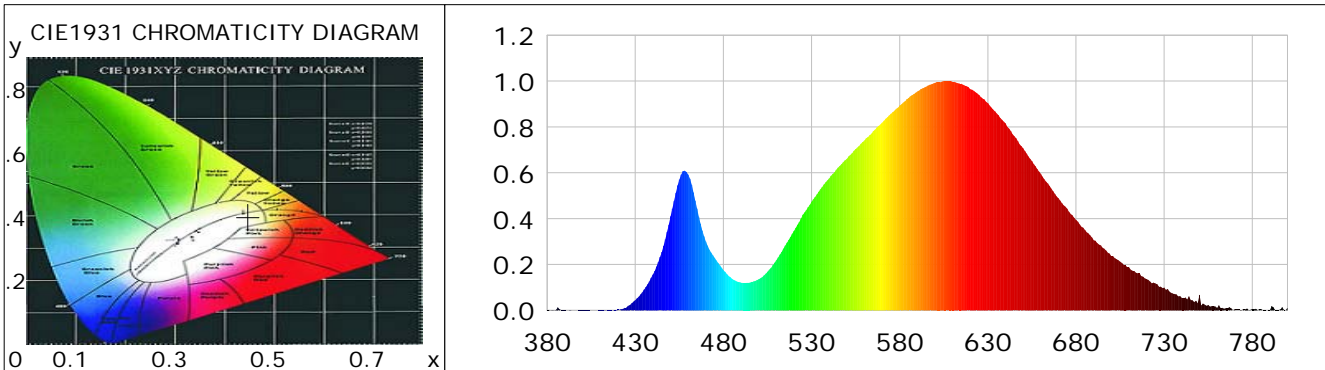
### Product Information

Product Category: LED-Lampen  
 Product Spec: LED-AR111-12-WW-C-25  
 Manufacturer: METOLIGHT  
 Buyer: 2320

Product Type: LED-Lampen-AR111  
 Product Number: 1  
 Submitted Unit: 101996

### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.4475$   $y=0.3982$   $u(u')=0.2601$   $v=0.3471$   $v'=0.5206$   
 CCT:  $T_c=2782K$  ( $duv=-0.00357$ ) Color Ratio:  $R=0.240$   $G=0.739$   $B=0.021$   
 Peak Wavelength: 608.6nm Half Bandwidth: 136.3nm  
 Dominant Wavelength: 585.1nm Color Purity: 0.538  
 CRI:  $R_a=78.4$ ,  $avgR(1\sim14)=71.5$ ,  $avgR(1\sim15)=71.7$  TM30:  $R_f=78$ ,  $R_g=96$   
 GAI:  $GAI\_BB\_8=104.9$ ,  $GAI\_BB\_15=114.7$ ,  $GAI\_EES=53.6$   
 R1 =77 R2 =88 R3 =94 R4 =72 R5 =75 R6 =81 R7 =82 R8 =59  
 R9 =11 R10=69 R11=64 R12=56 R13=79 R14=96 R15=74  
 Color Quality Scale:  $Q_a=75.9$ ,  $Q_f=76.2$ ,  $Q_p=81.3$ ,  $Q_g=93.3$   
 Q1 =79 Q2 =95 Q3 =72 Q4 =64 Q5 =71 Q6 =73 Q7 =73 Q8 =78  
 Q9 =95 Q10=83 Q11=77 Q12=76 Q13=78 Q14=73 Q15=75



### Photometric Parameters

Luminous Flux: 675.86 lm Efficiency: 53.34 lm/W Radiant Power: 2.145 W  
 Total mains efficacy: 58.09 lm/W Energy Efficiency Class: G (EU 2019/2015)  
 Pupil Flux: 774.08 Plm Pupil Lumens Per Watt: 61.10 Plm/W Pupil Factor (Kp): 1.145  
 Circopic Flux: 1350.71 lm

### Electric Parameters

Voltage: 10.870V Current: 1.1100A Power: 12.67W  
 Power Factor: 0.8280 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: 46440 (3121) CCD Integration Time: 629.31 ms

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

Test Device: Lisun LMS-9000B  
 Test Time: 2021-08-17 11:13:23  
 Inspector:

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WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0015	0.0205	525	0.4172	5.7468	670	0.4894	6.7418
385	0.0021	0.0294	530	0.4737	6.5253	675	0.4433	6.1072
390	0.0015	0.0201	535	0.5279	7.2723	680	0.3944	5.4334
395	0.0003	0.0047	540	0.5759	7.9326	685	0.3506	4.8295
400	0.0015	0.0205	545	0.6222	8.5717	690	0.3058	4.2120
405	0.0001	0.0015	550	0.6609	9.1037	695	0.2731	3.7619
410	0.0011	0.0153	555	0.7035	9.6916	700	0.2361	3.2529
415	0.0017	0.0229	560	0.7410	10.2069	705	0.2124	2.9260
420	0.0036	0.0497	565	0.7824	10.7780	710	0.1872	2.5785
425	0.0120	0.1654	570	0.8182	11.2712	715	0.1618	2.2284
430	0.0445	0.6124	575	0.8578	11.8162	720	0.1362	1.8757
435	0.0901	1.2411	580	0.8937	12.3109	725	0.1179	1.6246
440	0.1563	2.1531	585	0.9260	12.7559	730	0.0995	1.3708
445	0.2547	3.5086	590	0.9549	13.1542	735	0.0734	1.0108
450	0.4098	5.6450	595	0.9756	13.4385	740	0.0550	0.7581
455	0.5704	7.8577	600	0.9924	13.6700	745	0.0457	0.6293
460	0.5924	8.1611	605	0.9999	13.7744	750	0.0674	0.9283
465	0.4445	6.1234	610	0.9964	13.7255	755	0.0232	0.3201
470	0.3005	4.1391	615	0.9881	13.6111	760	0.0107	0.1480
475	0.2290	3.1548	620	0.9651	13.2945	765	0.0092	0.1264
480	0.1759	2.4229	625	0.9391	12.9363	770	0.0048	0.0655
485	0.1368	1.8848	630	0.9036	12.4477	775	0.0051	0.0708
490	0.1213	1.6705	635	0.8593	11.8368	780	0.0050	0.0687
495	0.1211	1.6675	640	0.8155	11.2339	785	0.0055	0.0759
500	0.1361	1.8747	645	0.7599	10.4684	790	0.0009	0.0121
505	0.1687	2.3235	650	0.7069	9.7379	795	0.0019	0.0264
510	0.2188	3.0140	655	0.6508	8.9654	800	0.0130	0.1797
515	0.2820	3.8853	660	0.5956	8.2050			
520	0.3464	4.7721	665	0.5426	7.4749			

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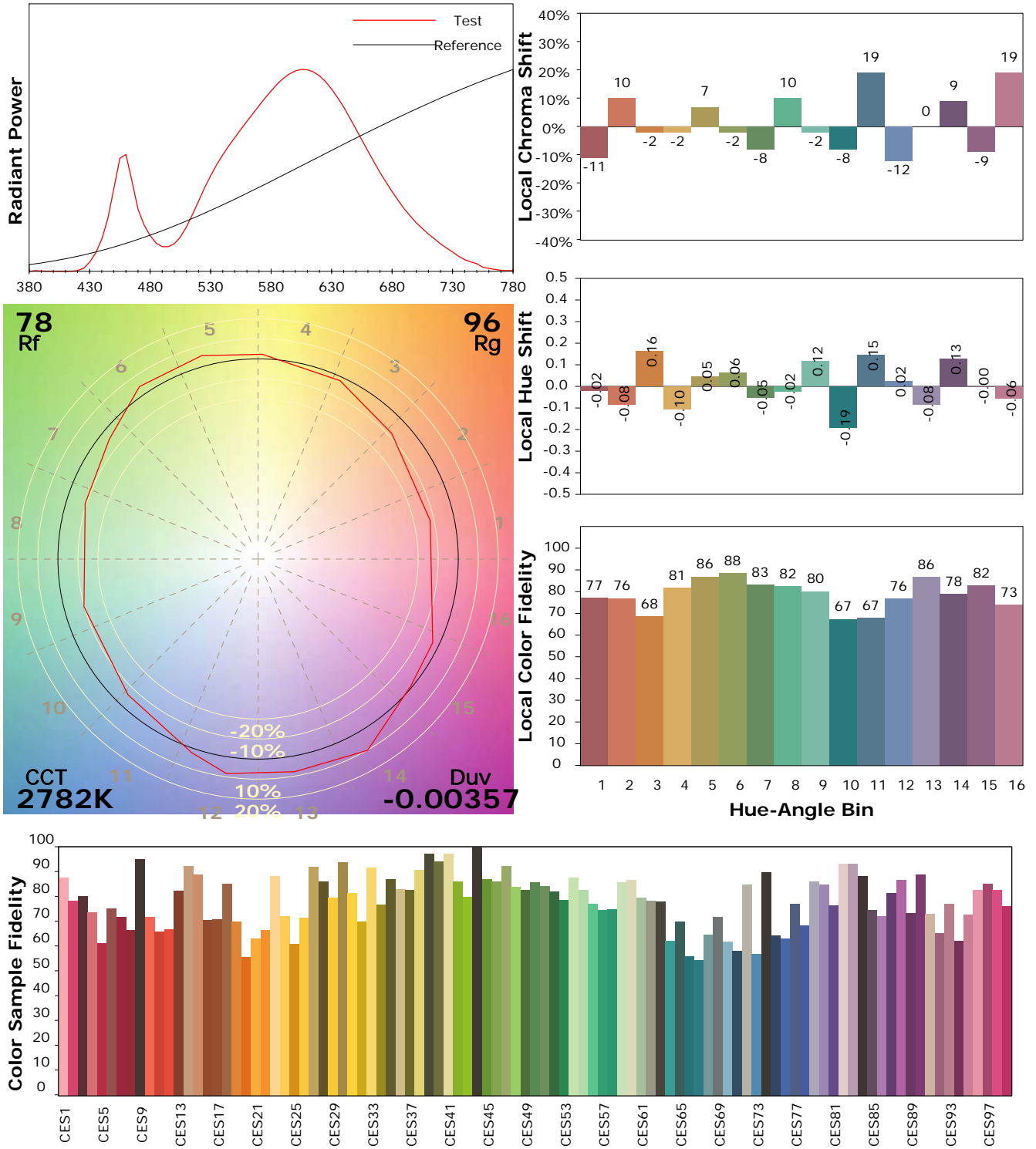
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## IES TM-30-18 Color Rendition Report

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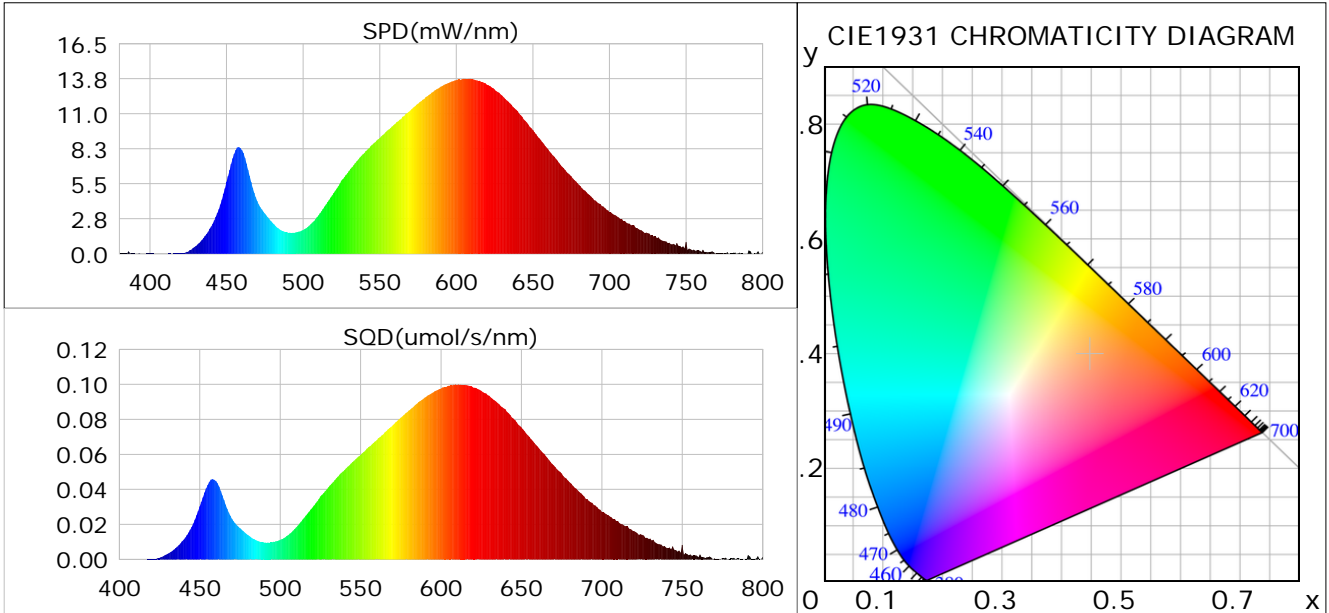
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Test Device: Lisun LMS-9000B  
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## Plant optical param data

### CIE Colorimetric Parameters

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 Peak Wavelength: 608.6nm Half Bandwidth: 136.3nm  
 Dominant Wavelength: 585.1nm Color Purity: 0.538  
 CRI:  $R_a=78.4$



### Plant Optical Param

$ \mu_v(\text{lm})$ : 675.86	$Q_v(\text{lm}\cdot\text{s})$ : 675.86
$ \mu_e, \dot{E}(\text{W/nm})$ : 2.15	$Q_e(\text{J})$ : 2.15
$ \mu_e(\text{W})$ : 2.06	$ \mu_{fr}(\text{W})$ : 0.09
$ \zeta_e$ : 0.16	$ \zeta_{fr}$ : 0.01
PPE( $\mu\text{mol/s/w}$ ): 0.79	Kfr: 0.04
Erb_Ratio: 3.60	PPF( $\mu\text{mol/s}$ ): 10.05
PFuv(360-400)( $\mu\text{mol/s}$ ): 0.00	PPF(400-500)( $\mu\text{mol/s}$ ): 1.00
PPF(500-600)( $\mu\text{mol/s}$ ): 4.08	PPF(600-700)( $\mu\text{mol/s}$ ): 4.98
PPfr(700-800)( $\mu\text{mol/s}$ ): 0.54	PPF.t( $\mu\text{mol}$ ): 10.05
$ \mu_{ch-A.t}(\text{J})$ : 0.17	$ \mu_{ch-A}(\text{W})$ : 0.17
$ \mu_{ch-B.t}(\text{J})$ : 0.08	$ \mu_{ch-B}(\text{W})$ : 0.08
$ \mu_b.t(\text{J})$ : 0.26	$ \mu_b(\text{W})$ : 0.26
$ \mu_y.t(\text{J})$ : 0.87	$ \mu_y(\text{W})$ : 0.87
$ \mu_r.t(\text{J})$ : 0.94	$ \mu_r(\text{W})$ : 0.94

### Electric Parameters

Voltage: 10.870V	Current: 1.1100A	Power: 12.67W
Power Factor: 0.8280	Frequency: 49.99Hz	

Condition:  $T_x:0.0^\circ\text{C}$ ,  $T_i:0.0^\circ\text{C}$ , R.H.: 60%  
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