

Lightsource Test Report

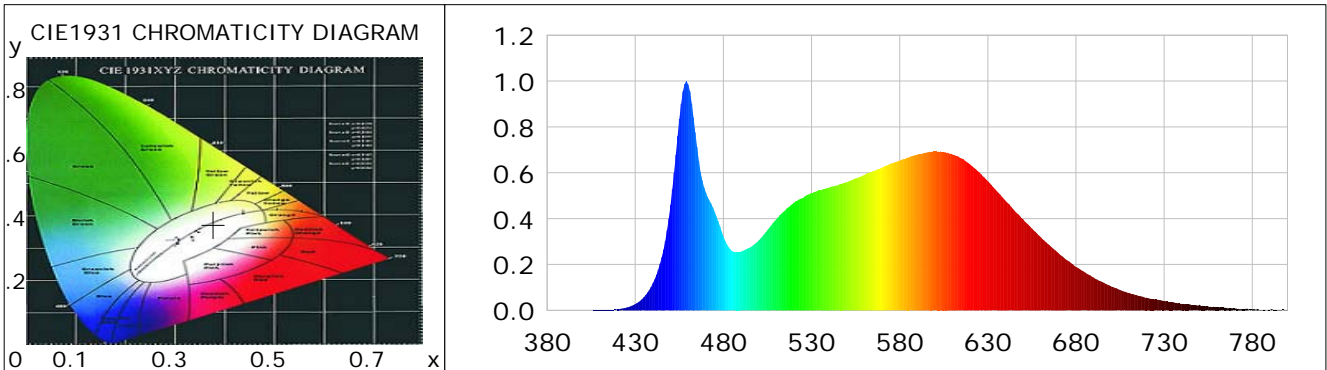
Product Information

Product Category: LED-Röhre
 Product Spec: Ledtube-115-5NWM-HO-24W-TRF
 Manufacturer: METOLIGHT
 Buyer: 7709

Product Type: LED-Röhre-TRF
 Product Number: 1
 Submitted Unit: 104532

CIE Colorimetric Parameters

Chromaticity coordinates: $x=0.3771$ $y=0.3740$ $u(u')=0.2240$ $v=0.3332$ $v'=0.4998$
 CCT: $T_c=4073K$ ($duv=-0.00032$) Color Ratio: $R=0.189$ $G=0.767$ $B=0.044$
 Peak Wavelength: 459.0nm Half Bandwidth: 20.2nm
 Dominant Wavelength: 579.0nm Color Purity: 0.254
 CRI: $R_a=86.4$, $avgR(1\sim14)=81.3$, $avgR(1\sim15)=81.4$ TM30: $R_f=83$, $R_g=92$
 GAI: $GAI_BB_8=91.6$, $GAI_BB_15=100.1$, $GAI_EES=73.3$
 R1 =87 R2 =96 R3 =96 R4 =82 R5 =85 R6 =91 R7 =85 R8 =70
 R9 =30 R10=87 R11=81 R12=60 R13=90 R14=99 R15=82
 Color Quality Scale: $Q_a=84.4$, $Q_f=84.7$, $Q_p=83.2$, $Q_g=91.8$
 Q1 =81 Q2 =95 Q3 =84 Q4 =76 Q5 =78 Q6 =80 Q7 =86 Q8 =90
 Q9 =98 Q10=94 Q11=90 Q12=88 Q13=88 Q14=79 Q15=81



Photometric Parameters

Luminous Flux: 3083.0 lm Efficiency: 119.03 lm/W Radiant Power: 9.629 W
 Total mains efficacy: 129.63 lm/W Energy Efficiency Class: E (EU 2019/2015)
 Pupil Flux: 4866.55 Plm Pupil Lumens Per Watt: 187.90 Plm/W Pupil Factor (Kp): 1.579
 Circopic Flux: 10327.17 lm

Electric Parameters

Voltage: 230.00V Current: 0.1130A Power: 25.90W
 Power Factor: 0.9370 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: 45577 (2370) CCD Integration Time: 80.00 ms

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WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0002	0.0141	525	0.4898	37.1115	670	0.2503	18.9646
385	0.0006	0.0482	530	0.5112	38.7344	675	0.2185	16.5541
390	0.0003	0.0193	535	0.5236	39.6680	680	0.1897	14.3752
395	0.0003	0.0233	540	0.5361	40.6141	685	0.1660	12.5778
400	0.0006	0.0421	545	0.5458	41.3527	690	0.1426	10.8024
405	0.0006	0.0437	550	0.5586	42.3207	695	0.1231	9.3240
410	0.0012	0.0946	555	0.5754	43.5971	700	0.1044	7.9127
415	0.0025	0.1856	560	0.5908	44.7590	705	0.0888	6.7281
420	0.0050	0.3799	565	0.6082	46.0840	710	0.0762	5.7728
425	0.0123	0.9321	570	0.6226	47.1680	715	0.0647	4.8982
430	0.0273	2.0703	575	0.6407	48.5416	720	0.0552	4.1786
435	0.0581	4.4012	580	0.6535	49.5139	725	0.0476	3.6049
440	0.1184	8.9672	585	0.6666	50.5018	730	0.0413	3.1271
445	0.2318	17.5645	590	0.6793	51.4664	735	0.0350	2.6504
450	0.4606	34.9003	595	0.6881	52.1366	740	0.0286	2.1678
455	0.8350	63.2654	600	0.6932	52.5190	745	0.0248	1.8792
460	0.9850	74.6299	605	0.6907	52.3325	750	0.0239	1.8135
465	0.7134	54.0487	610	0.6794	51.4732	755	0.0173	1.3117
470	0.5141	38.9525	615	0.6630	50.2289	760	0.0146	1.1025
475	0.4301	32.5867	620	0.6362	48.2006	765	0.0113	0.8557
480	0.3224	24.4253	625	0.6022	45.6292	770	0.0085	0.6476
485	0.2581	19.5531	630	0.5632	42.6671	775	0.0063	0.4793
490	0.2568	19.4552	635	0.5204	39.4253	780	0.0046	0.3511
495	0.2740	20.7621	640	0.4780	36.2153	785	0.0026	0.1997
500	0.3045	23.0686	645	0.4362	33.0465	790	0.0021	0.1624
505	0.3505	26.5557	650	0.3967	30.0591	795	0.0032	0.2388
510	0.3979	30.1463	655	0.3573	27.0687	800	0.0040	0.3032
515	0.4360	33.0336	660	0.3195	24.2096			
520	0.4694	35.5679	665	0.2836	21.4890			

Condition: Tx: 19.8°C, Ti: 0.0°C, R.H.: 60%
 Test Lab:
 Operator: CRE

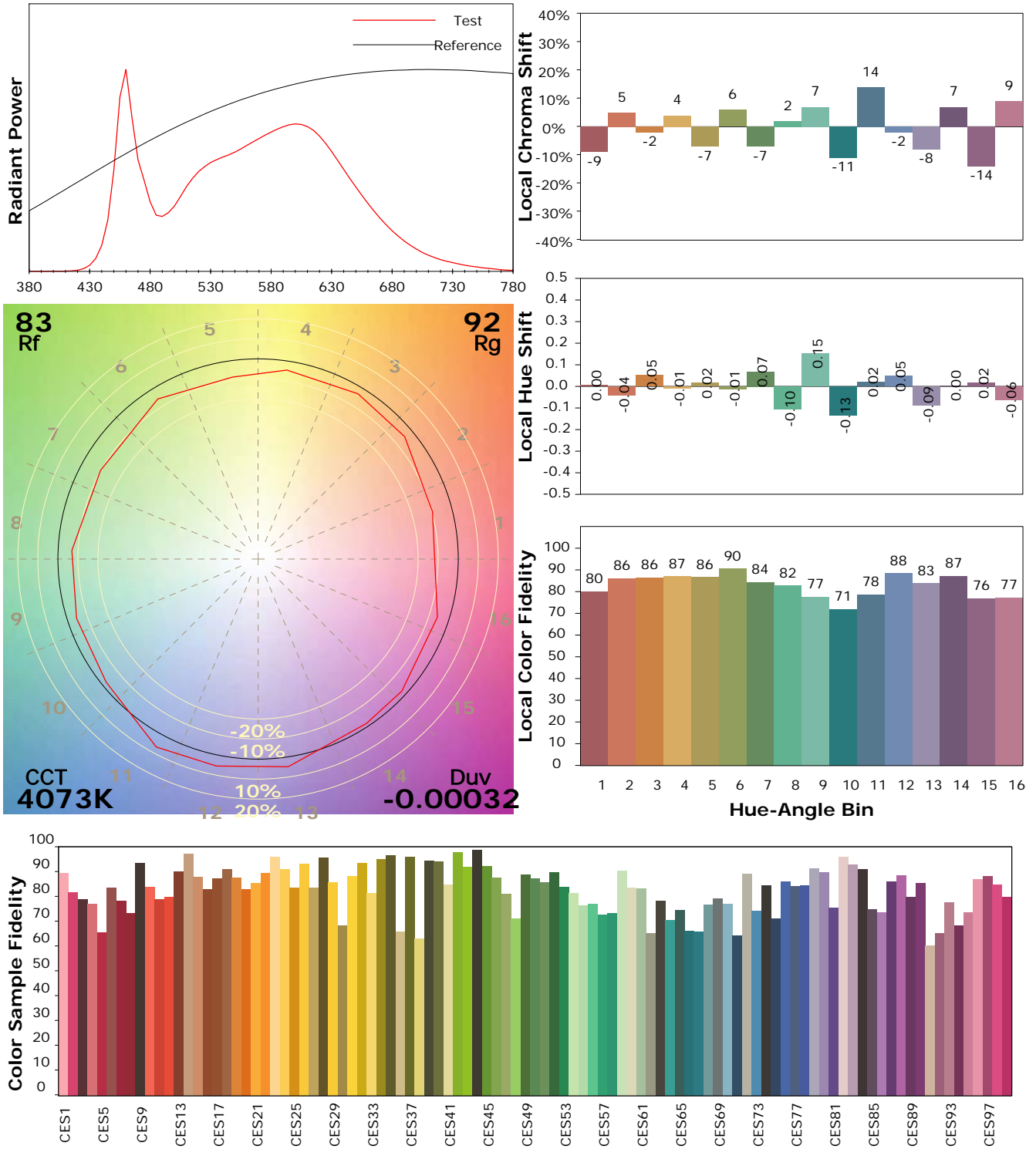
Test Device: Lisun LMS-9000B
 Test Time: 2021-01-22 11:50:17
 Inspector:

IES TM-30-18 Color Rendition Report

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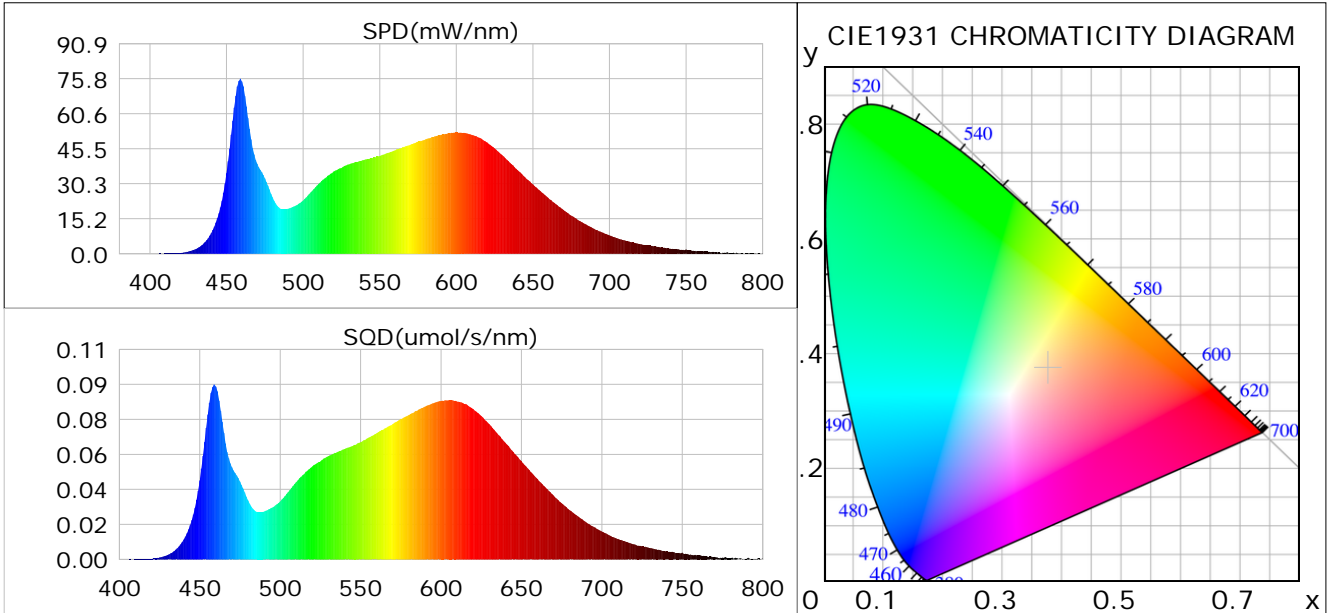
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Plant optical param data

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 CRI: $R_a=86.4$



Plant Optical Param

$ \mu_v(lm): 3083.00$	$Q_v(lm.s): 3083.00$
$ \mu_e, \dot{E}(W/nm): 9.63$	$Q_e(J): 9.63$
$ \mu_e(W): 9.41$	$ \mu_{fr}(W): 0.23$
$ \zeta_e: 0.36$	$ \zeta_{fr}: 0.01$
$PPE(umol/s/w): 1.70$	$K_{fr}: 0.05$
$Erb_Ratio: 1.42$	$PPF(umol/s): 44.14$
$PF_{uv}(360-400)(umol/s): 0.00$	$PPF(400-500)(umol/s): 8.39$
$PPF(500-600)(umol/s): 19.51$	$PPF(600-700)(umol/s): 16.23$
$PPF_{fr}(700-800)(umol/s): 1.37$	$PPF.t(umol): 44.14$
$ \mu_{ch-A.t}(J): 0.70$	$ \mu_{ch-A}(W): 0.70$
$ \mu_{ch-B.t}(J): 0.47$	$ \mu_{ch-B}(W): 0.47$
$ \mu_b.t(J): 2.15$	$ \mu_b(W): 2.15$
$ \mu_y.t(J): 4.22$	$ \mu_y(W): 4.22$
$ \mu_r.t(J): 3.10$	$ \mu_r(W): 3.10$

Electric Parameters

Voltage: 230.00V	Current: 0.1130A	Power: 25.90W
Power Factor: 0.9370	Frequency: 49.99Hz	

Condition: $T_x: 19.8^\circ C$, $T_i: 0.0^\circ C$, R.H.: 60%
 Test Lab:
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