

Lightsource Test Report

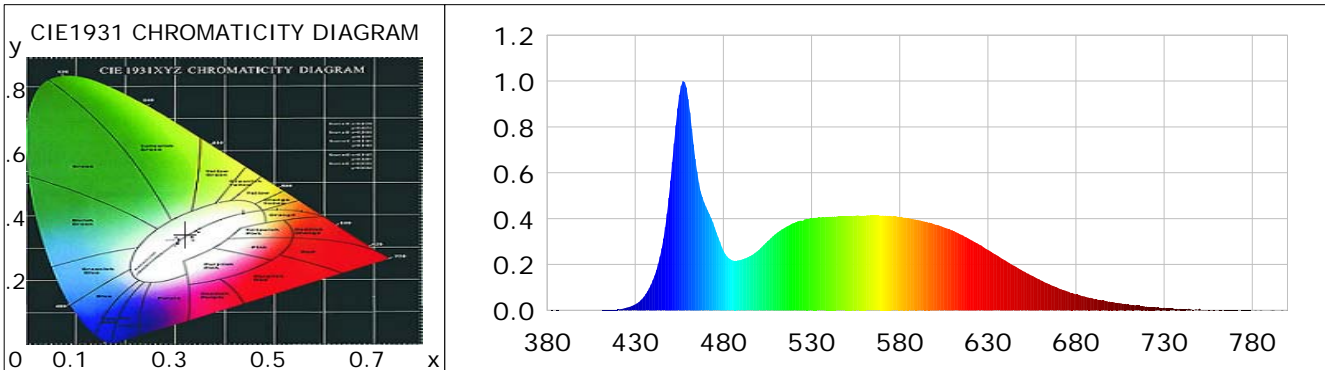
Product Information

Product Category: LED-Röhre
 Product Spec: LEDtube-090-8CWM-14W-24
 Manufacturer: METOLIGHT
 Buyer: 4624

Product Type: LED-Röhre-Spezial
 Product Number: 1
 Submitted Unit: 105039

CIE Colorimetric Parameters

Chromaticity coordinates: $x=0.3206$ $y=0.3441$ $u(u')=0.1977$ $v=0.3182$ $v'=0.4773$
 CCT: $T_c=6032K$ ($duv=0.00694$) Color Ratio: $R=0.139$ $G=0.802$ $B=0.059$
 Peak Wavelength: 457.3nm Half Bandwidth: 18.7nm
 Dominant Wavelength: 503.1nm Color Purity: 0.039
 CRI: $R_a=83.3$, $avgR(1\sim14)=76.3$, $avgR(1\sim15)=76.4$ TM30: $R_f=81$, $R_g=90$
 GAI: $GAI_BB_8=86.0$, $GAI_BB_15=93.2$, $GAI_EES=82.0$
 R1 =82 R2 =92 R3 =94 R4 =78 R5 =81 R6 =87 R7 =85 R8 =67
 R9 =10 R10=79 R11=77 R12=53 R13=86 R14=98 R15=77
 Color Quality Scale: $Q_a=81.2$, $Q_f=81.6$, $Q_p=79.4$, $Q_g=88.7$
 Q1 =78 Q2 =95 Q3 =82 Q4 =72 Q5 =74 Q6 =76 Q7 =82 Q8 =89
 Q9 =97 Q10=92 Q11=87 Q12=86 Q13=85 Q14=73 Q15=76



Photometric Parameters

Luminous Flux: 1439.1 lm Efficiency: 116.43 lm/W Radiant Power: 4.505 W
 Total mains efficacy: 136.92 lm/W Energy Efficiency Class: D (EU 2019/2015)
 Pupil Flux: 2698.23 Plm Pupil Lumens Per Watt: 218.30 Plm/W Pupil Factor (Kp): 1.875
 Circopic Flux: 6244.38 lm

Electric Parameters

Voltage: 24.000V Current: 0.5080A Power: 12.36W
 Power Factor: 0.7190 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: 45936 (2413) CCD Integration Time: 100.89 ms

Condition: $T_x=20.4^{\circ}C$, $T_i=0.0^{\circ}C$, R.H.: 60%
 Test Lab:
 Operator: CRE

Test Device: Lisun LMS-9000B
 Test Time: 2021-01-14 13:46:27
 Inspector:

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WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0004	0.0221	525	0.3905	20.5819	670	0.0969	5.1062
385	0.0010	0.0520	530	0.4012	21.1455	675	0.0829	4.3703
390	0.0004	0.0198	535	0.4054	21.3650	680	0.0698	3.6788
395	0.0001	0.0047	540	0.4078	21.4933	685	0.0600	3.1647
400	0.0004	0.0206	545	0.4098	21.5990	690	0.0500	2.6359
405	0.0003	0.0179	550	0.4107	21.6475	695	0.0427	2.2530
410	0.0005	0.0248	555	0.4123	21.7273	700	0.0355	1.8722
415	0.0011	0.0590	560	0.4132	21.7772	705	0.0311	1.6366
420	0.0036	0.1904	565	0.4146	21.8510	710	0.0256	1.3500
425	0.0112	0.5920	570	0.4134	21.7849	715	0.0216	1.1396
430	0.0259	1.3667	575	0.4116	21.6919	720	0.0165	0.8685
435	0.0600	3.1633	580	0.4068	21.4389	725	0.0142	0.7476
440	0.1315	6.9309	585	0.4014	21.1555	730	0.0116	0.6101
445	0.2705	14.2575	590	0.3946	20.7970	735	0.0084	0.4439
450	0.5658	29.8183	595	0.3863	20.3577	740	0.0058	0.3078
455	0.9390	49.4859	600	0.3748	19.7543	745	0.0043	0.2287
460	0.9208	48.5287	605	0.3623	19.0933	750	0.0072	0.3815
465	0.6052	31.8980	610	0.3488	18.3830	755	0.0013	0.0677
470	0.4534	23.8932	615	0.3301	17.3958	760	0.0014	0.0724
475	0.3622	19.0892	620	0.3086	16.2629	765	0.0010	0.0503
480	0.2606	13.7334	625	0.2876	15.1549	770	0.0015	0.0767
485	0.2183	11.5064	630	0.2632	13.8729	775	0.0009	0.0495
490	0.2200	11.5971	635	0.2405	12.6738	780	0.0007	0.0352
495	0.2363	12.4522	640	0.2165	11.4106	785	0.0034	0.1792
500	0.2628	13.8511	645	0.1942	10.2370	790	0.0002	0.0094
505	0.3016	15.8967	650	0.1710	9.0103	795	0.0010	0.0549
510	0.3354	17.6780	655	0.1511	7.9654	800	0.0025	0.1334
515	0.3613	19.0432	660	0.1309	6.8966			
520	0.3811	20.0837	665	0.1134	5.9746			

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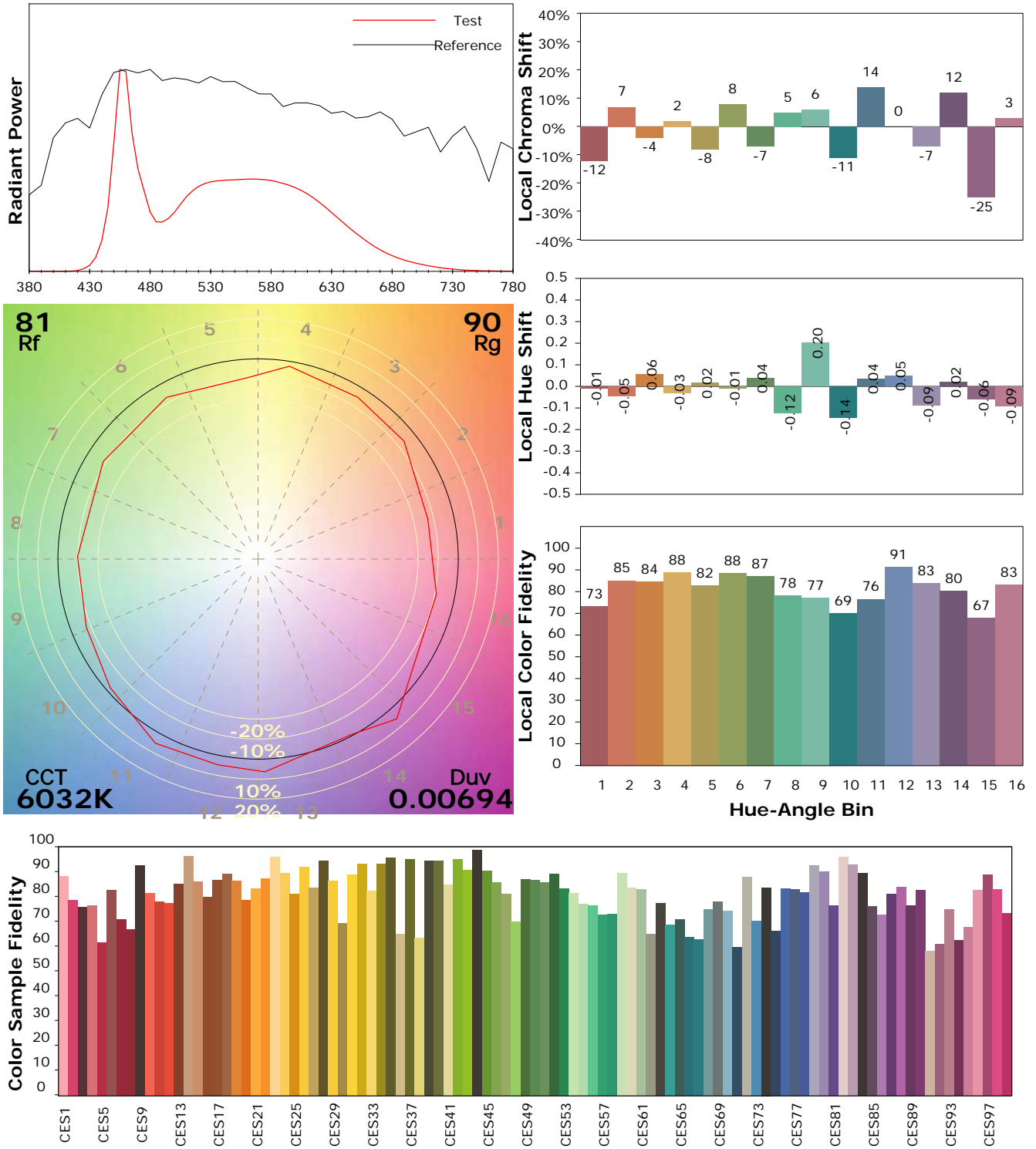
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IES TM-30-18 Color Rendition Report

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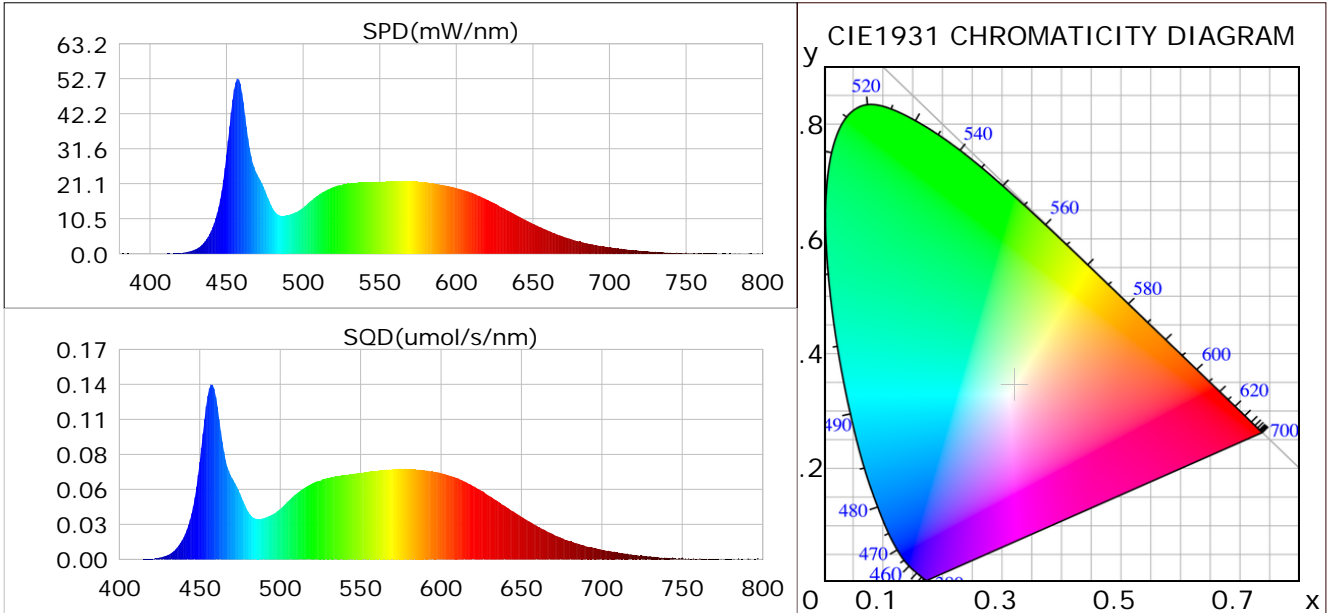
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Plant optical param data

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 CRI: $R_a=83.3$



Plant Optical Param

$ \mu_v(lm)$: 1439.10	$Q_v(lm.s)$: 1439.10
$ \mu_e, \dot{E}(W/nm)$: 4.51	$Q_e(J)$: 4.51
$ \mu_e(W)$: 4.46	$ \mu_{fr}(W)$: 0.05
$ \zeta_e$: 0.36	$ \zeta_{fr}$: 0.00
$PPE(umol/s/w)$: 1.63	K_{fr} : 0.02
Erb_Ratio : 0.68	$PPF(umol/s)$: 20.20
$PF_{uv}(360-400)(umol/s)$: 0.00	$PPF(400-500)(umol/s)$: 5.57
$PPF(500-600)(umol/s)$: 9.48	$PPF(600-700)(umol/s)$: 5.15
$PPF_r(700-800)(umol/s)$: 0.27	$PPF.t(umol)$: 20.20
$ \mu_{ch-A.t}(J)$: 0.32	$ \mu_{ch-A}(W)$: 0.32
$ \mu_{ch-B.t}(J)$: 0.27	$ \mu_{ch-B}(W)$: 0.27
$ \mu_b.t(J)$: 1.43	$ \mu_b(W)$: 1.43
$ \mu_y.t(J)$: 2.07	$ \mu_y(W)$: 2.07
$ \mu_r.t(J)$: 0.99	$ \mu_r(W)$: 0.99

Electric Parameters

Voltage: 24.000V	Current: 0.5080A	Power: 12.36W
Power Factor: 0.7190	Frequency: 49.99Hz	

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