TL-749

IES LM-79-08

MEASUREMENT AND TEST REPORT

For

GREEN CREATIVE LTD

756 North Zhongshan Rd., Unit B301 Zhabei District, Shanghai, China

Test Model: LE259027DIM120VVN/ADR9.5WH

Report Type:	Electrical and Photometric tests including: Input Current, Power, Power Factor, Luminous Flux, Luminous Efficacy, CRI, CCT, Chromaticity Coordinate, Spectral Power Distribution
Test Engineer:	George Yang
Report Number:	RKSB190329023-10-12
Test Date:	2019-07-17
Report Date:	2019-07-17
Reviewed By:	Ray Gao/EE Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Kunshan). No.248 Chenghu Road, Kunshan, Jiangsu province, China. Tel: +86-0512-86175000 Fax:+86-0512-88934268
Test Facility:	Test facility was located at No.248 Chenghu Road, Kunshan, Jiangsu province, China.
Accreditation:	The IAS Accreditation Number TL-749.

1. Product Description

General Information:

One sample was received on 2018-04-01 and used for testing.

Model Tested:	LE259027DIM120VVN/ADR9.5WH
Manufacturer:	GREEN CREATIVE LTD
Brand Name:	GREEN CREATIVE
Product Designation:	LED Recessed Downlight
Aging Time Before Test:	0hour(For New Products)

Rated Values:

Rated Voltage/Frequency:	120-277VAC, 60Hz
Rated Power:	31W
Nominal CCT:	2700K
Nominal Lumen Output:	2050lm

2. Standards Used

- IES LM-79-08: Approved Method: Electrical & Photometric Measurement of Solid-state Lighting Products
- ANSI C82.77-10-2014: Harmonic Emission Limits – Related Power Quality Requirements for Lighting Equipment
- IES TM-30-15: IES Method for Evaluating Light Source Color Rendition

3. Description of Test Equipment

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
Integrating Sphere	INVENTFINE	Dia 1.5m	JWWCV090112	2019-01-23	2020-01-23
Power Meter	INVENTFINE	WT500	GSJWQ20009	2019-04-08	2020-04-08
Spectral photometer	INVENTFINE	CMS-3S	GSGSE100017	2019-01-23	2020-01-23
AC Power Supply	INVENTFINE	CHP500	JWJSD010071	2019-04-08	2020-04-08
Standard Light Source	INVENTFINE	N/A	JWWCR020106	2018-12-24	2019-12-24
Thermal Meter	KEJIAN	TA298	N/A	2018-12-01	2019-12-01
DC Power Supply	INVENTFINE	WL3005	JWWCP020069	2019-04-08	2020-04-08

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Kunshan) attested that all calibration has been performed using suitable standards traceable to National Primary Standards and International System of Units (SI).

4. Test Method

Product was tested with no seasoning. All stabilization and measurements were made in compliance with IES LM-79-08. The product was operated at rated voltage or at voltage required by manufacturer. The ambient temperature of the sample was maintained at 25°C±1°C during measurement. And relative humidity is less than 65%.

Integrating Sphere System

The system includes AC power source, digital power meter, DC power supply, Spectroradiometer, and integrating sphere. The integrating sphere system is calibrated by standard spectrum light source before measurement.

4π geometry was used during measurement. The product was operated in its intended orientation in application and was recorded in this report.

The uncertainty of the light output (luminous flux) measurements is U_{rel}=2.61% (k=2), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is U=34K (k=2), at the 95% confidence level. The uncertainty of the CRI is U=2.5(k=2), at the 95% confidence level.

The uncertainty of power meter AC current U_{rel}=0.48 % of rdg, AC Voltage U_{rel}=0.25% of rdg, Power U_{rel}=0.44%,(k=2), at the 95% confidence level.

Fidelity Index and Gamut Index Calculation

The R_f, R_g was calculated according to IES TM-30-15 by using calculation tools. The calculation was based on the measured SPD from 380nm to 780nm with 1nm intervals. All the colors in this report is for reference only.

5. Test Result

[Integrating Sphere System]

Total operating time for integrating sphere test: **1.0 hour**

Test orientation: **Downward**

Photometric and Electrical Measurement Result

Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Luminous Flux(lm)	Efficacy (lm/W)
120	60	0.2642	31.25	0.9857	2131.13	68.2

Radiant Flux (W)	CCT (K)	Duv	x	y	u'	v'
7.609	2696	-0.00145	0.4577	0.4062	0.2631	0.5253

Color Rendering Index

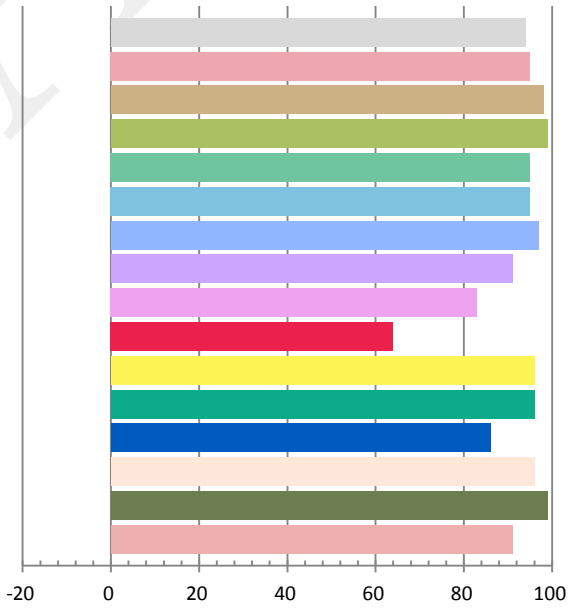
Ra
94.0

R1	R2	R3	R4
95	98	99	95

R5	R6	R7	R8
95	97	91	83

R9	R10	R11	R12
64	96	96	86

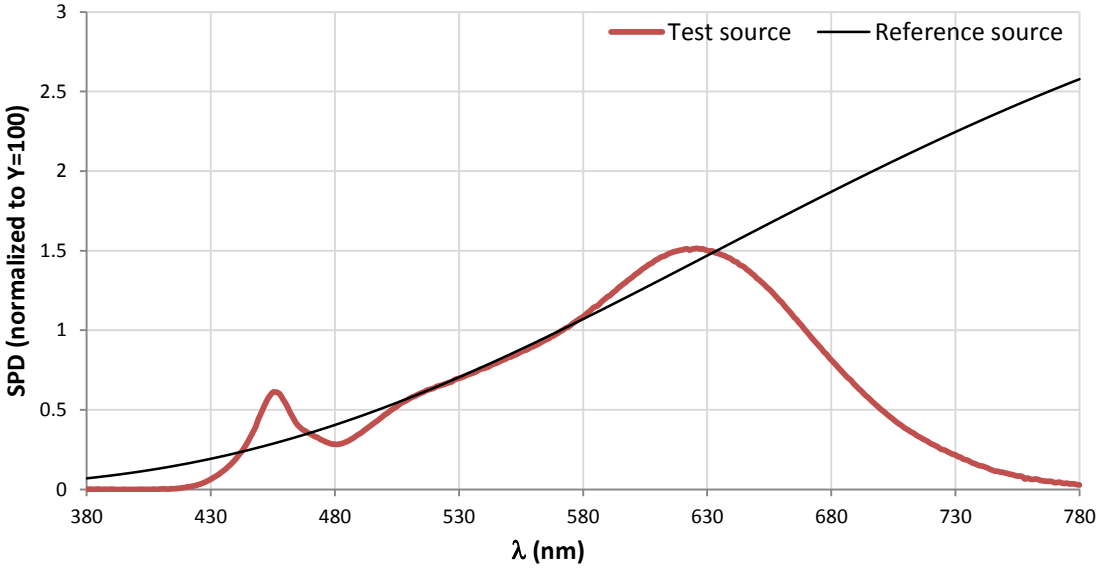
R13	R14	R15
96	99	91



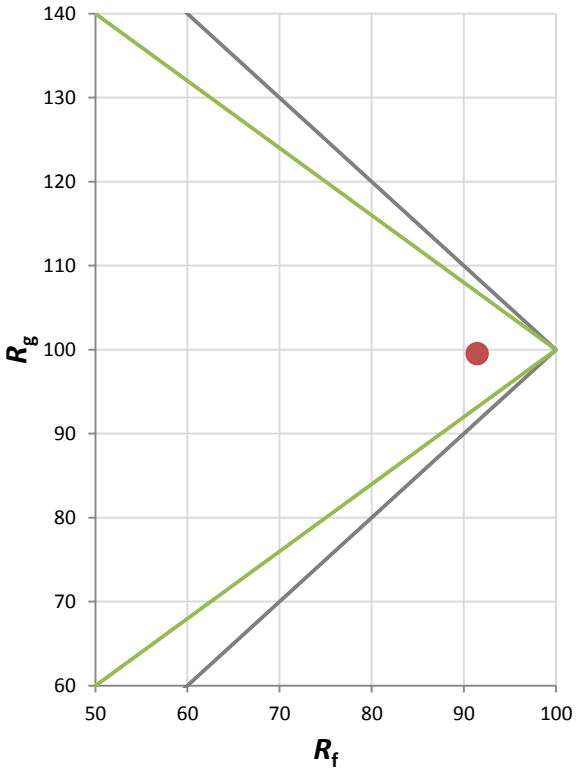
Fidelity Index and Gamut Index

Fidelity Index R_f	91
Gamut Index R_g	100

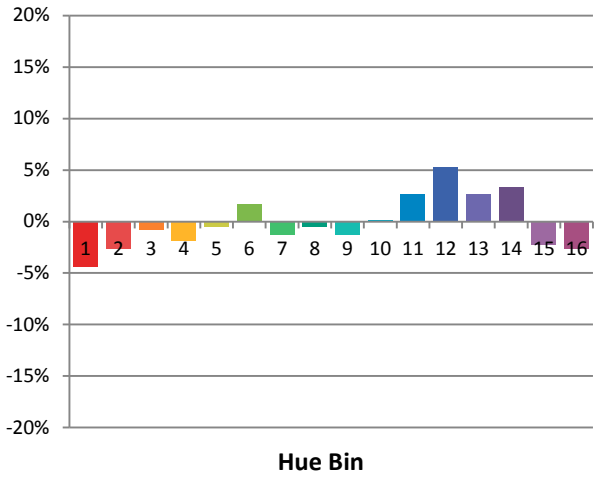
Spectral Power Distribution Comparison



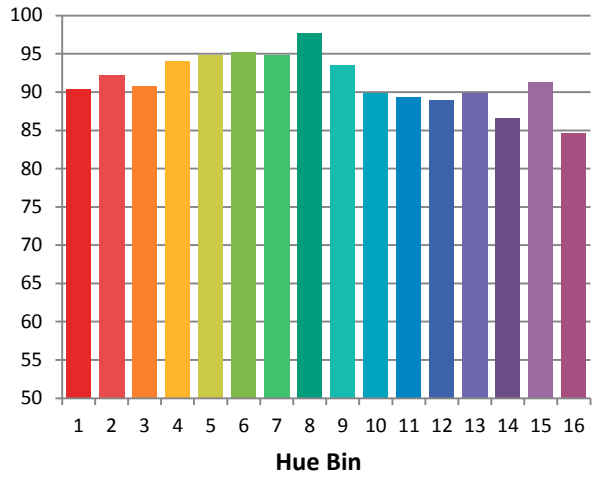
Plot of R_g versus R_f



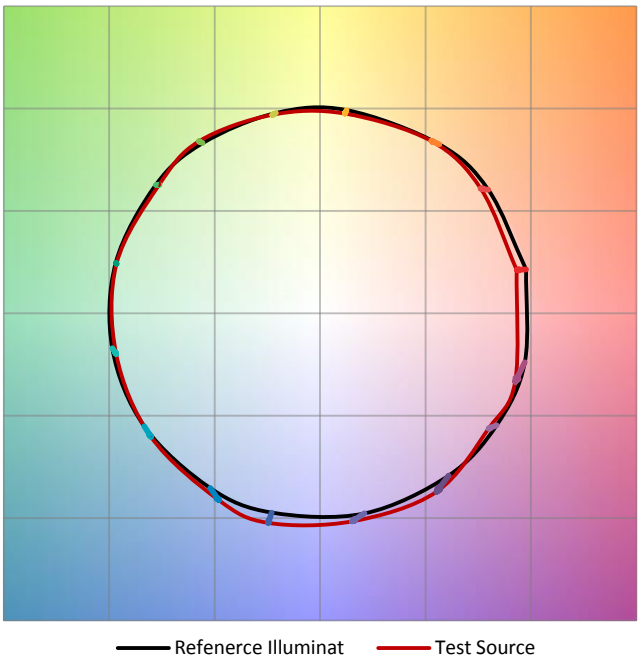
Chroma Shift by Hue



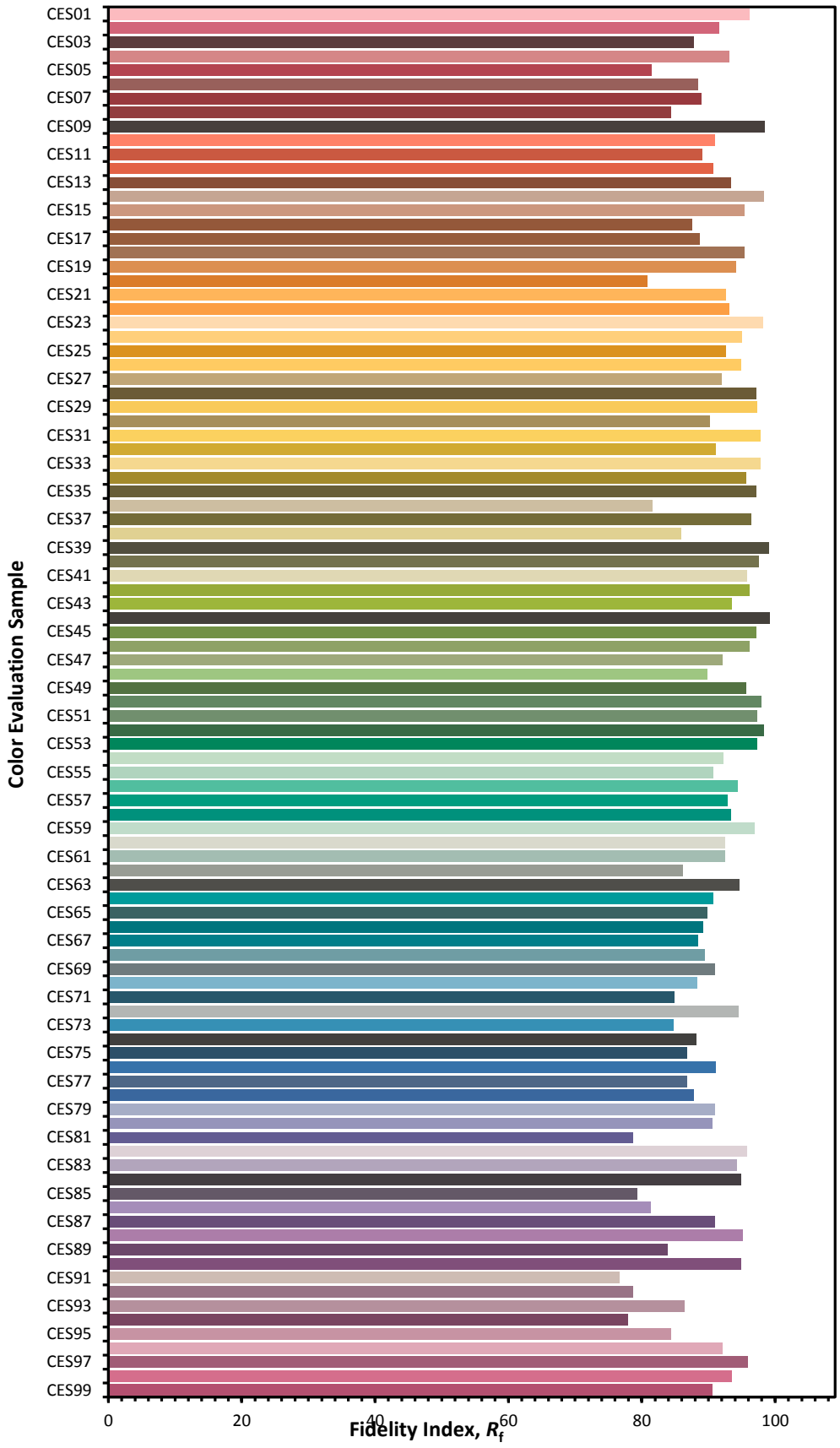
R_f by Hue



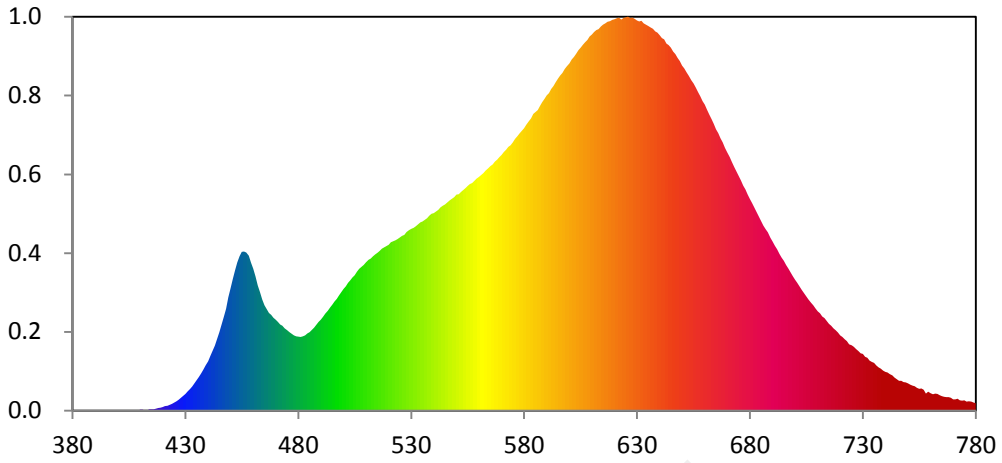
Color Vector Graphic



Color Fidelity by CES Sample



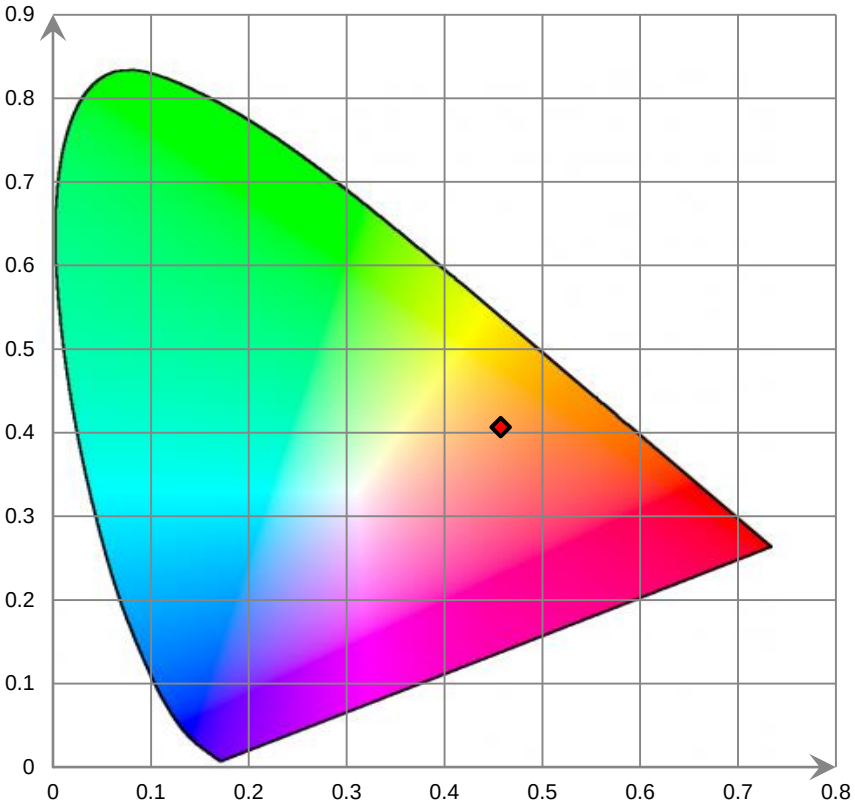
Relative Spectral Power Distribution



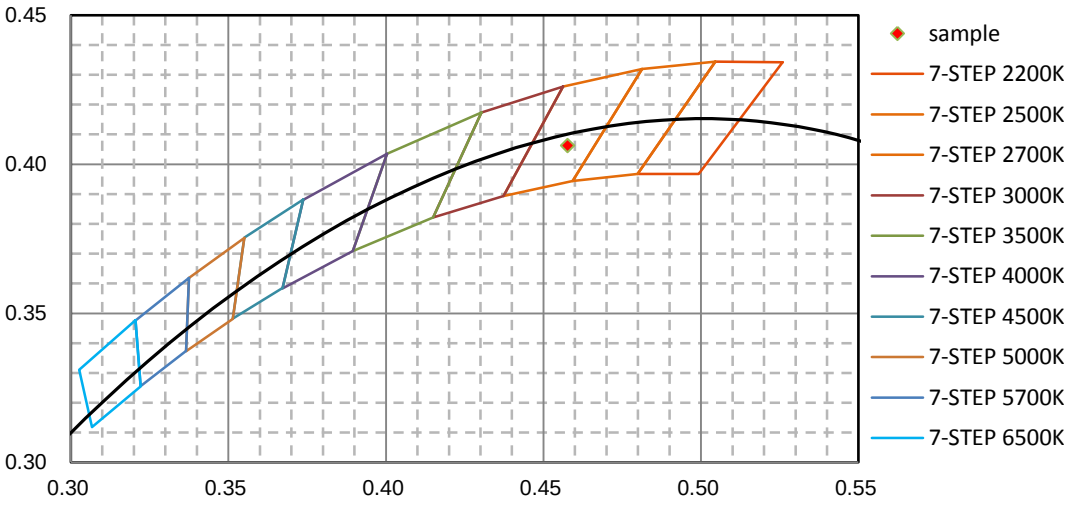
nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
380	2.400E-02	421	5.374E-01	462	1.503E+01	503	1.565E+01	544	2.458E+01
381	4.620E-02	422	5.786E-01	463	1.420E+01	504	1.597E+01	545	2.474E+01
382	6.130E-02	423	6.869E-01	464	1.331E+01	505	1.626E+01	546	2.497E+01
383	8.500E-03	424	7.824E-01	465	1.264E+01	506	1.667E+01	547	2.522E+01
384	6.680E-02	425	9.580E-01	466	1.215E+01	507	1.700E+01	548	2.544E+01
385	7.350E-02	426	1.099E+00	467	1.172E+01	508	1.723E+01	549	2.561E+01
386	6.000E-03	427	1.293E+00	468	1.149E+01	509	1.749E+01	550	2.594E+01
387	4.200E-02	428	1.516E+00	469	1.114E+01	510	1.778E+01	551	2.598E+01
388	3.200E-02	429	1.753E+00	470	1.091E+01	511	1.808E+01	552	2.625E+01
389	2.010E-02	430	2.009E+00	471	1.066E+01	512	1.824E+01	553	2.645E+01
390	6.510E-02	431	2.302E+00	472	1.034E+01	513	1.850E+01	554	2.670E+01
391	2.130E-02	432	2.586E+00	473	1.019E+01	514	1.874E+01	555	2.697E+01
392	3.700E-03	433	2.886E+00	474	9.865E+00	515	1.895E+01	556	2.720E+01
393	1.600E-03	434	3.254E+00	475	9.640E+00	516	1.914E+01	557	2.732E+01
394	2.700E-03	435	3.630E+00	476	9.391E+00	517	1.945E+01	558	2.757E+01
395	4.760E-02	436	4.017E+00	477	9.209E+00	518	1.957E+01	559	2.786E+01
396	2.900E-03	437	4.464E+00	478	9.011E+00	519	1.973E+01	560	2.804E+01
397	3.000E-03	438	4.901E+00	479	8.901E+00	520	1.988E+01	561	2.827E+01
398	3.000E-04	439	5.410E+00	480	8.867E+00	521	2.018E+01	562	2.850E+01
399	5.500E-03	440	5.923E+00	481	8.836E+00	522	2.032E+01	563	2.879E+01
400	2.000E-04	441	6.576E+00	482	8.925E+00	523	2.044E+01	564	2.909E+01
401	1.880E-02	442	7.163E+00	483	9.024E+00	524	2.060E+01	565	2.934E+01
402	4.410E-02	443	7.808E+00	484	9.238E+00	525	2.078E+01	566	2.953E+01
403	1.340E-02	444	8.587E+00	485	9.413E+00	526	2.095E+01	567	2.990E+01
404	9.700E-03	445	9.407E+00	486	9.691E+00	527	2.108E+01	568	3.009E+01
405	3.030E-02	446	1.032E+01	487	9.952E+00	528	2.144E+01	569	3.041E+01
406	1.150E-02	447	1.125E+01	488	1.028E+01	529	2.166E+01	570	3.068E+01
407	7.680E-02	448	1.220E+01	489	1.063E+01	530	2.180E+01	571	3.102E+01
408	6.900E-03	449	1.358E+01	490	1.092E+01	531	2.193E+01	572	3.128E+01
409	5.550E-02	450	1.467E+01	491	1.126E+01	532	2.213E+01	573	3.164E+01
410	9.450E-02	451	1.579E+01	492	1.165E+01	533	2.236E+01	574	3.184E+01
411	1.001E-01	452	1.683E+01	493	1.200E+01	534	2.257E+01	575	3.219E+01
412	9.140E-02	453	1.779E+01	494	1.237E+01	535	2.271E+01	576	3.261E+01
413	5.140E-02	454	1.850E+01	495	1.273E+01	536	2.289E+01	577	3.292E+01
414	1.414E-01	455	1.904E+01	496	1.310E+01	537	2.310E+01	578	3.327E+01
415	1.387E-01	456	1.910E+01	497	1.342E+01	538	2.340E+01	579	3.358E+01
416	1.600E-01	457	1.897E+01	498	1.381E+01	539	2.363E+01	580	3.388E+01
417	2.184E-01	458	1.858E+01	499	1.420E+01	540	2.371E+01	581	3.430E+01
418	2.886E-01	459	1.774E+01	500	1.461E+01	541	2.389E+01	582	3.471E+01
419	3.373E-01	460	1.699E+01	501	1.491E+01	542	2.407E+01	583	3.508E+01
420	4.249E-01	461	1.610E+01	502	1.531E+01	543	2.438E+01	584	3.559E+01

nm	mW	nm	mW	nm	mW	nm	mW	nm	mW
585	3.585E+01	626	4.727E+01	667	3.268E+01	708	1.264E+01	749	3.375E+00
586	3.607E+01	627	4.713E+01	668	3.220E+01	709	1.226E+01	750	3.244E+00
587	3.656E+01	628	4.716E+01	669	3.153E+01	710	1.192E+01	751	3.118E+00
588	3.704E+01	629	4.702E+01	670	3.098E+01	711	1.166E+01	752	2.995E+00
589	3.742E+01	630	4.684E+01	671	3.041E+01	712	1.131E+01	753	2.902E+00
590	3.783E+01	631	4.672E+01	672	2.981E+01	713	1.108E+01	754	2.743E+00
591	3.808E+01	632	4.678E+01	673	2.924E+01	714	1.074E+01	755	2.625E+00
592	3.858E+01	633	4.646E+01	674	2.869E+01	715	1.041E+01	756	2.627E+00
593	3.893E+01	634	4.631E+01	675	2.816E+01	716	1.016E+01	757	2.503E+00
594	3.942E+01	635	4.617E+01	676	2.762E+01	717	9.881E+00	758	2.048E+00
595	3.981E+01	636	4.597E+01	677	2.698E+01	718	9.625E+00	759	2.244E+00
596	4.021E+01	637	4.583E+01	678	2.655E+01	719	9.370E+00	760	2.052E+00
597	4.054E+01	638	4.553E+01	679	2.591E+01	720	9.011E+00	761	1.960E+00
598	4.099E+01	639	4.538E+01	680	2.539E+01	721	8.815E+00	762	2.048E+00
599	4.132E+01	640	4.505E+01	681	2.487E+01	722	8.574E+00	763	2.009E+00
600	4.169E+01	641	4.469E+01	682	2.436E+01	723	8.328E+00	764	1.831E+00
601	4.214E+01	642	4.456E+01	683	2.382E+01	724	7.945E+00	765	1.711E+00
602	4.245E+01	643	4.405E+01	684	2.327E+01	725	7.813E+00	766	1.651E+00
603	4.283E+01	644	4.385E+01	685	2.275E+01	726	7.637E+00	767	1.602E+00
604	4.325E+01	645	4.355E+01	686	2.221E+01	727	7.361E+00	768	1.610E+00
605	4.354E+01	646	4.309E+01	687	2.177E+01	728	7.123E+00	769	1.525E+00
606	4.392E+01	647	4.277E+01	688	2.139E+01	729	6.889E+00	770	1.328E+00
607	4.421E+01	648	4.232E+01	689	2.076E+01	730	6.793E+00	771	1.357E+00
608	4.447E+01	649	4.196E+01	690	2.027E+01	731	6.440E+00	772	1.428E+00
609	4.488E+01	650	4.141E+01	691	1.976E+01	732	6.347E+00	773	1.237E+00
610	4.512E+01	651	4.106E+01	692	1.935E+01	733	5.992E+00	774	1.181E+00
611	4.546E+01	652	4.060E+01	693	1.883E+01	734	5.842E+00	775	1.226E+00
612	4.565E+01	653	4.018E+01	694	1.834E+01	735	5.702E+00	776	1.080E+00
613	4.579E+01	654	3.965E+01	695	1.797E+01	736	5.423E+00	777	1.112E+00
614	4.610E+01	655	3.926E+01	696	1.746E+01	737	5.179E+00	778	1.064E+00
615	4.631E+01	656	3.877E+01	697	1.703E+01	738	5.035E+00	779	9.440E-01
616	4.649E+01	657	3.822E+01	698	1.657E+01	739	4.790E+00	780	8.760E-01
617	4.665E+01	658	3.770E+01	699	1.615E+01	740	4.637E+00		
618	4.676E+01	659	3.715E+01	700	1.569E+01	741	4.568E+00		
619	4.689E+01	660	3.672E+01	701	1.533E+01	742	4.378E+00		
620	4.697E+01	661	3.610E+01	702	1.491E+01	743	4.219E+00		
621	4.711E+01	662	3.552E+01	703	1.449E+01	744	3.941E+00		
622	4.716E+01	663	3.499E+01	704	1.411E+01	745	3.763E+00		
623	4.693E+01	664	3.441E+01	705	1.372E+01	746	3.579E+00		
624	4.714E+01	665	3.376E+01	706	1.331E+01	747	3.572E+00		
625	4.720E+01	666	3.332E+01	707	1.295E+01	748	3.410E+00		

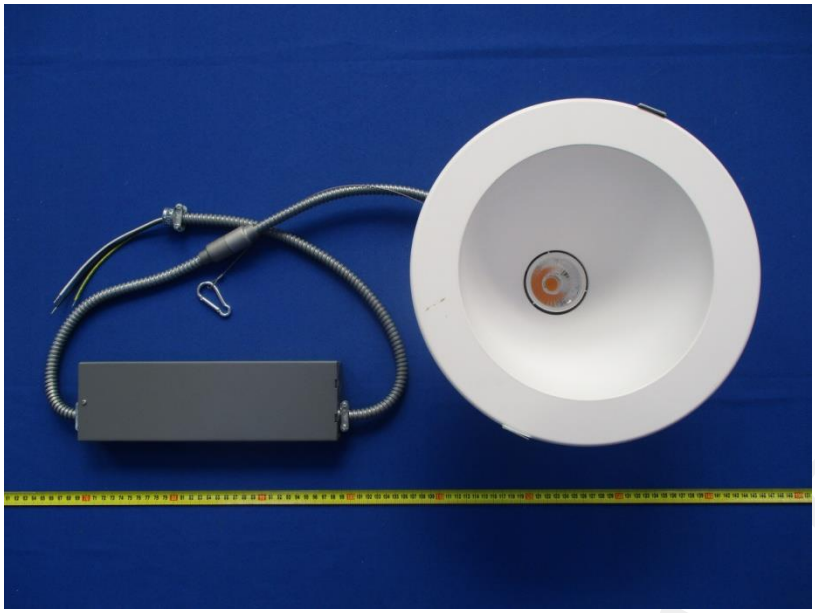
CIE 1931 x y Chromaticity Diagram

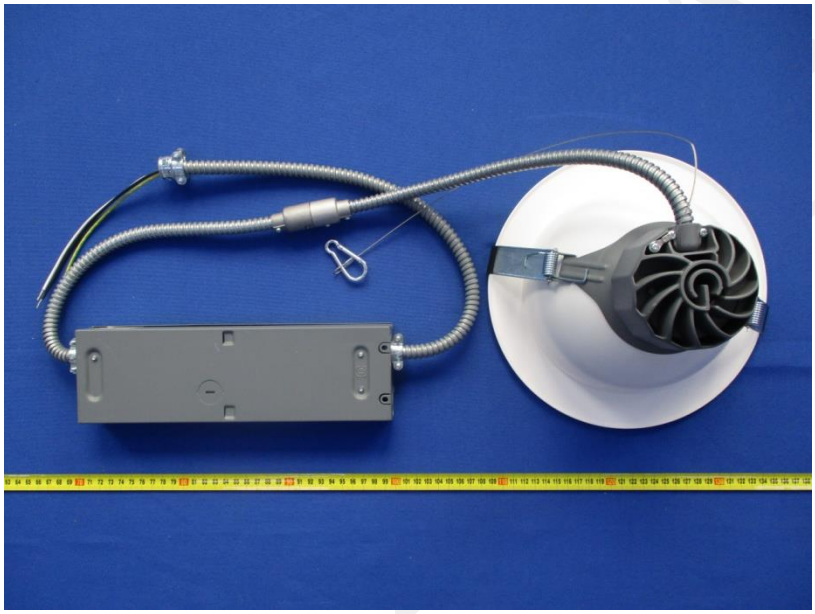


7-Step Chromaticity Quadrangles



6. Product Photo





**********END OF REPORT**********