



Report No.: RHL21101816-9

LM-79-08 Test Report

For

GREEN CREATIVE LTD

(Brand Name: GREEN CREATIVE)

Room 3603, Level 36, Tower 1, Enterprise Square Five, 38 Wang Chiu Road,
Kowloon Bay, KL, Hong Kong

LED Lamps

Model name(s): 9.5A19DIM/840

Test & Report By:

Peter Zhou

Engineer: Peter Zhou

Date: Oct,25,2021

Review By:

Ryan Liang

Manager: Ryan Liang

1.1 Product Information:

Organization Name	GREEN CREATIVE LTD	
Brand Name	GREEN CREATIVE	
Model Number	9.5A19DIM/840	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Lamps	
Rated Voltage / Frequency	120Vac, 60 Hz	
Nominal Power	9.5W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K	
LED Manufacturer	OSRAM OPTO SEMICONDUCTORS (MALAYSIA) SDN.BHD	
LED Model	GWx JTL6Sx.xM-xxxx-xxxx-x-x	
Sample Number	RHL21101816-901	
Lamp Length	--	mm
Lamp Width	--	mm
Number of Units (modular products)	N/A	s

Photo





1.2 Test Specifications:

Date of Receipt	Oct. 18, 2021
Date of Test	Oct. 20, 2021
Test item	<ol style="list-style-type: none">1. Total Luminous Flux2. Luminous Distribution Intensity3. Luminous Efficacy4. Correlated Color Temperature5. Color Rendering Index6. Chromaticity Coordinate7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none">1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products and IES-LM-79-2019 OPTICAL AND ELECTRICAL MEASUREMENTS OF SOLID-STATE LIGHTING PRODUCTS2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources4. CIE 15-2004 Technical Report Colorimetry5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	HL-WI-EE-001, HL-WI-EE-002

1.3 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.

2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.

3) Electrical Measurements:

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

**2.1 Electrical, Photometric and Chromaticity Measurements***(Refer to Work Instruction HL-WI-EE-001, HL-WI-EE-002)*

Test date	2021-10-20	Test Ambient:	25.1 °C
Model Number	9.5A19DIM/840	Stabilization Time (min)	90

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
RHL2110 1816-901	120.0	60	0.098	9.21	0.783	80.3

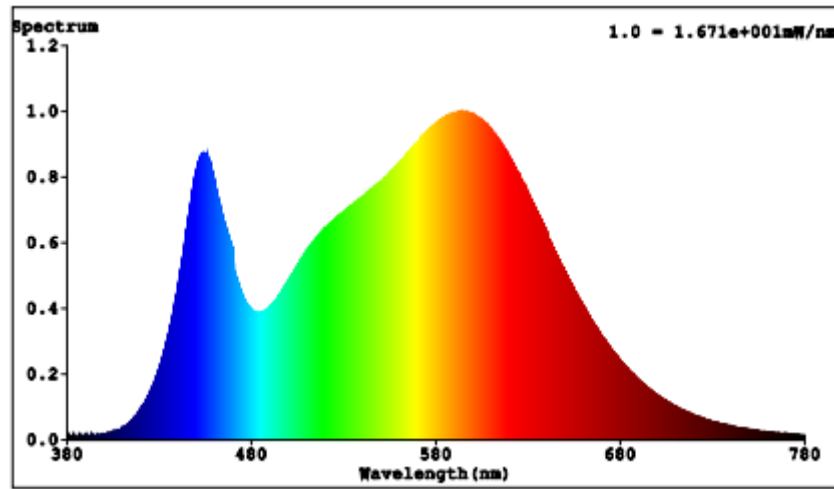
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	12
Frequency (Hz)	60	R2	92	R10	80
CCT (K)	4036	R3	96	R11	80
Duv	-0.0002	R4	82	R12	68
Chromaticity (x, y)	x =0.3788 y =0. 3754	R5	83	R13	85
Chromaticity (u', v')	u' =0.2246 v' = 0.5007	R6	88	R14	98
Color Rendering Index (CRI)	84	R7	86	R15	77
R9	12	R8	65	--	--
Rf	85	--	--	--	--
Rg	94	--	--	--	--
Rcs,h1(%)	-12	--	--	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

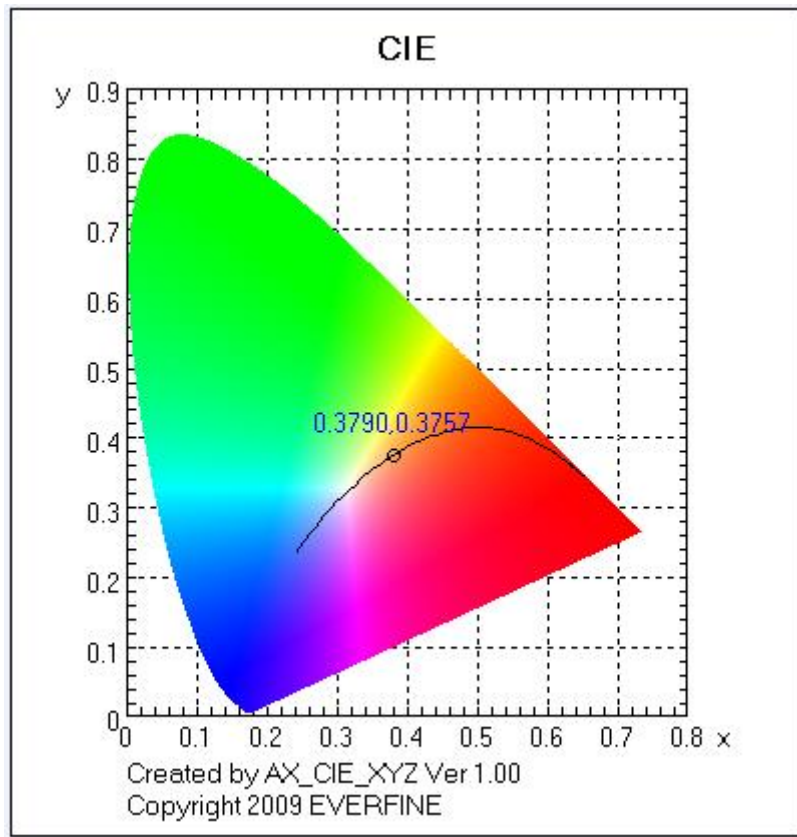
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	956.06
Luminous Efficacy (lm/W)	103.83

Relative Spectral Power Distribution

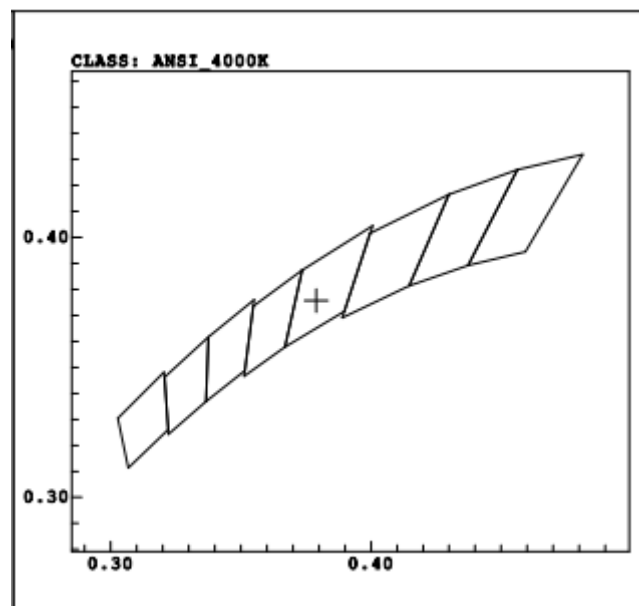


Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	0,0127	485	0,3868	590	0,9912	695	0,1570
385	0,0072	490	0,4048	595	0,9941	700	0,1357
390	0,0109	495	0,4399	600	0,9893	705	0,1167
395	0,0100	500	0,4842	605	0,9722	710	0,1005
400	0,0165	505	0,5304	610	0,9436	715	0,0858
405	0,0204	510	0,5755	615	0,9028	720	0,0737
410	0,0371	515	0,6113	620	0,8588	725	0,0635
415	0,0581	520	0,6408	625	0,8094	730	0,0548
420	0,0941	525	0,6683	630	0,7509	735	0,0469
425	0,1446	530	0,6930	635	0,6922	740	0,0400
430	0,2158	535	0,7154	640	0,6347	745	0,0344
435	0,3171	540	0,7366	645	0,5678	750	0,0296
440	0,4584	545	0,7618	650	0,5117	755	0,0258
445	0,6418	550	0,7844	655	0,4567	760	0,0220
450	0,8120	555	0,8126	660	0,4058	765	0,0188
455	0,8669	560	0,8428	665	0,3584	770	0,0165
460	0,7824	565	0,8718	670	0,3148	775	0,0142
465	0,6665	570	0,9043	675	0,2757	780	0,0132
470	0,5780	575	0,9357	680	0,2404		
475	0,4398	580	0,9613	685	0,2088		
480	0,3947	585	0,9808	690	0,1811		

CIE 1931xy Chromaticity Diagram



Chromaticity Quadrangles



**2.2 Electrical, Photometric and Chromaticity Measurements***(Refer to Work Instruction HL-WI-EE-001, HL-WI-EE-002)*

Test date	2021-10-20	Test Ambient:	25.1 ° C
Model Number	9.5A19DIM/840	Stabilization Time (min)	90

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
RHL2110 1816-901	120.0	60	0.100	9.33	0.778	81.18

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	922.5
Luminous Efficacy (lm/W)	98.87
Beam Angle (°)	224.4
Center Beam Candle Power (cd)	111



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Zonal Lumen Tabulation

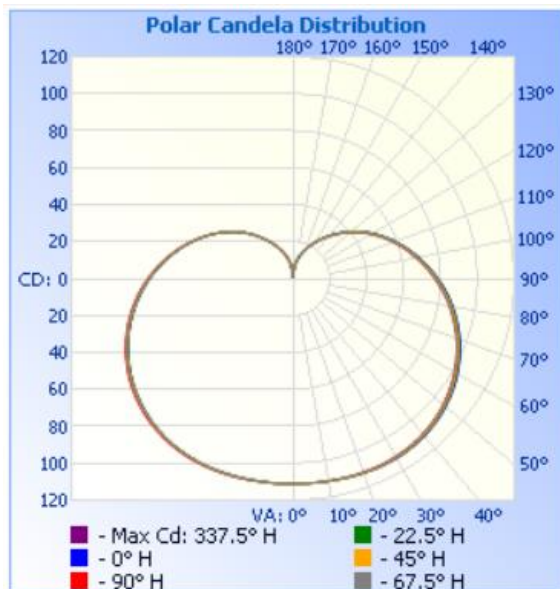
Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	94.0	10.2%	10.2%
0-40	163.8	17.8%	17.8%
0-60	342.2	37.1%	37.1%
60-90	285.1	30.9%	30.9%
70-100	266.7	28.9%	28.9%
90-120	200.1	21.7%	21.7%
0-90	627.3	68%	68%
90-180	295.2	32%	32%
0-180	922.5	100%	100%

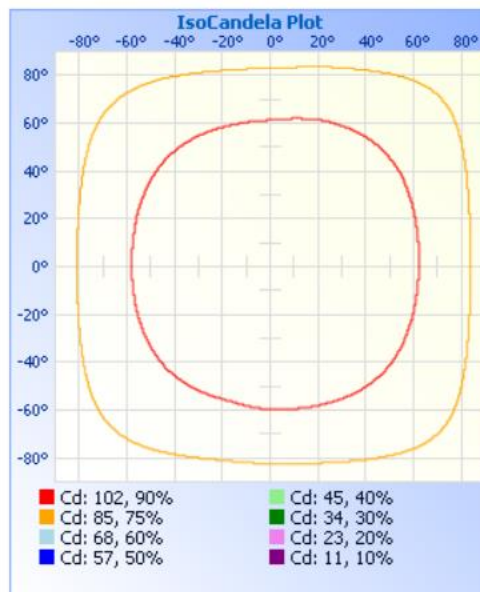
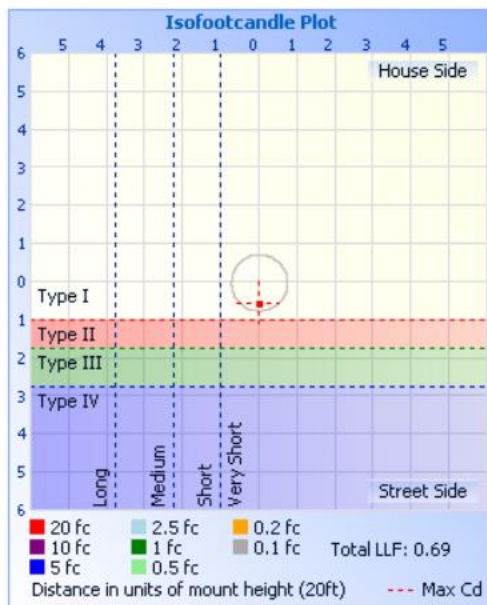
Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	10.6	1.1%	90-100	79.8	8.6%
10-20	31.6	3.4%	100-110	67.0	7.3%
20-30	51.8	5.6%	110-120	53.3	5.8%
30-40	69.8	7.6%	120-130	39.6	4.3%
40-50	84.3	9.1%	130-140	26.9	2.9%
50-60	94.0	10.2%	140-150	16.4	1.8%
60-70	98.2	10.6%	150-160	8.4	0.9%
70-80	96.7	10.5%	160-170	3.4	0.4%
80-90	90.2	9.8%	170-180	0.5	0.1%

Photometric Data

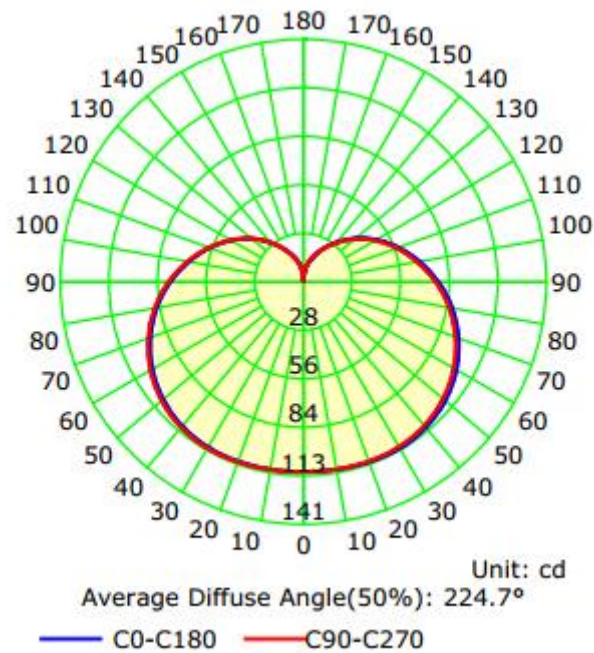


Illuminance at a Distance		
	Center Beam fc	Beam Width
17.0ft	0.38 fc	
34.0ft	0.10 fc	
51.0ft	0.04 fc	
68.0ft	0.02 fc	
85.0ft	0.02 fc	
102.0ft	0.01 fc	





Luminous Intensity Distribution Curve



	C0/C180	C90/C270	C45/C225	C135/315	Avg.
Field Angle	332.0	331.9	333.0	327.9	331.20
Beam Angle	225.0	224.4	225.0	223.8	224.55

**Candela Table - Type C**

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
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Laboratory: Hopestar Test Lab Limited, NVLAP Code: 600245-0
Add: Room 212, 24 Building, 7 Qingyi Road, Hi-Tech Zone, Ningbo, China
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132	38	37	37	37	37	37	37	37	37	38	38	38	38	38	38	38	38

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3. Test Equipment

Equipment Name	Model No.	Serial No.	Next Calibration Date
Goniophotometric System	GPM-3000	91N827816	2022-09-26
AC Power Source	CHP-1000	213630	2022-09-19
Total Luminous Flux Standard Lamp	24V150W	24V150W	2022-08-10
Digital Power Meter	WT500	TBS1012 C020506	2022-09-19
Integral Sphere (2M)	2m sphere	N.A	N/A
Digital Power Meter	PF310A	P609877CD1391157	2022-04-02
Optical Color and Electrical Measurement System	HAAS-2000	M108544CM5351115	2022-09-26
Expand Uncertainty: Photometric Measurement (Sphere): 2.08%, k=2 Chromaticity Measurement(Sphere):25.6K, k=2 Photometric Measurement(Goniophotometer):2.645%, k=2			

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