



Report No.: RHL21101803-9

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): 9A19DIM/835/R

Test & Report By:

Peter Zhou

Engineer: Peter Zhou

Date: Oct,20,2021

Review By:

Ryan Liang

Manager: Ryan Liang

1.1 Product Information:

Organization Name	GREEN CREATIVE LTD	
Brand Name	GREEN CREATIVE	
Model Number	9A19DIM/835/R	
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	9W	
Rated Initial Lamp Lumen	--	
Declared CCT	3500K	
LED Manufacturer	Bridgelux Inc.	
LED Model	BXVN-XXE-13H-9HV	
Sample Number	RHL21101803-901	
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. 18, 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	2021-10-18	Test Ambient:	25.1 °C
Model Number	9A19DIM/835/R	Stabilization Time (min)	90

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
RHL2110 1803-901	120.0	60	0.09	8.98	0.83	66.2

Chromaticity Measurement - Sphere-Spectroradiometer Method:

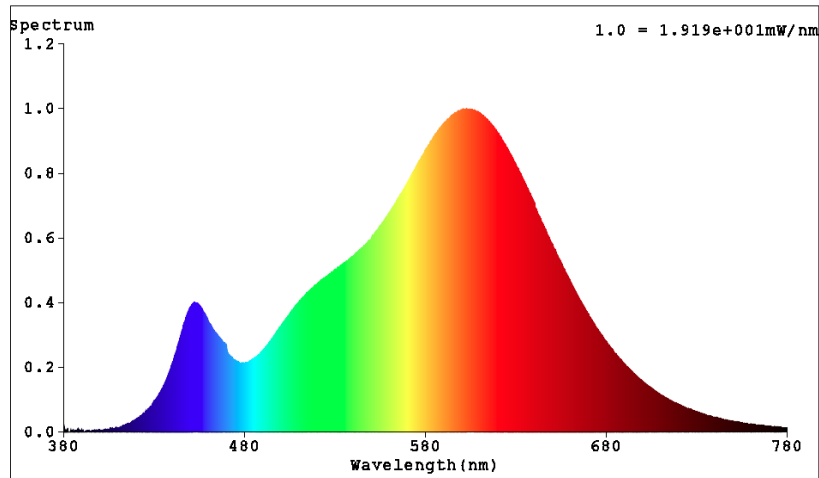
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	8
Frequency (Hz)	60	R2	91	R10	78
CCT (K)	3506	R3	96	R11	80
Duv	-0.0011	R4	81	R12	70
Chromaticity (x, y)	x = 0.4040 y = 0.3879	R5	82	R13	84
Chromaticity (u', v')	u' = 0.2360 v' = 0.5099	R6	88	R14	98
Color Rendering Index (CRI)	83.3	R7	84	R15	75
R9	8	R8	62	--	--
Rf	85	--	--	--	--
Rg	95	--	--	--	--
Rcs,h1(%)	-12	--	--	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	992.15
Luminous Efficacy (lm/W)	110.48

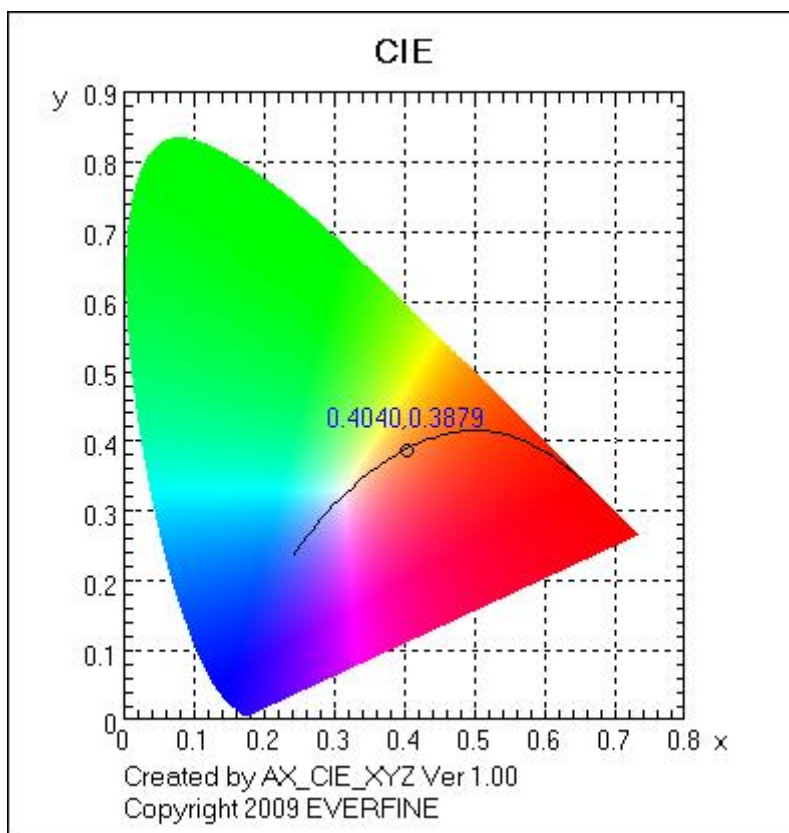


Relative Spectral Power Distribution

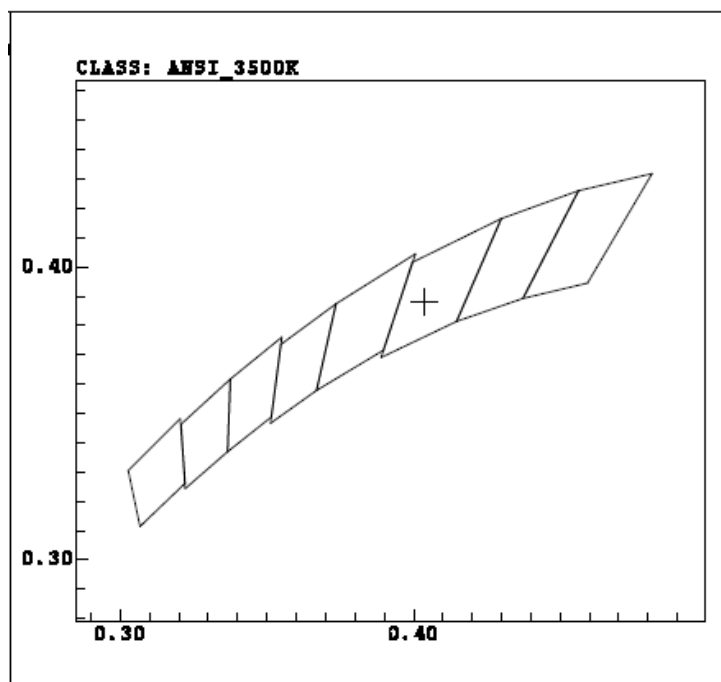


Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	0.0065	485	0.2818	590	0.9775	695	0.1615
385	0.0059	490	0.3056	595	0.9955	700	0.1383
390	0.0089	495	0.3452	600	0.9969	705	0.1185
395	0.0054	500	0.3951	605	0.9867	710	0.1014
400	0.0113	505	0.4422	610	0.9676	715	0.0867
405	0.0138	510	0.4867	615	0.9327	720	0.0747
410	0.0230	515	0.5253	620	0.8886	725	0.0631
415	0.0412	520	0.5555	625	0.8403	730	0.0547
420	0.0673	525	0.5801	630	0.7832	735	0.0464
425	0.1066	530	0.6020	635	0.7227	740	0.0398
430	0.1685	535	0.6261	640	0.6637	745	0.0337
435	0.2532	540	0.6496	645	0.5937	750	0.0291
440	0.3766	545	0.6729	650	0.5349	755	0.0248
445	0.5372	550	0.7009	655	0.4803	760	0.0215
450	0.6648	555	0.7343	660	0.4246	765	0.0184
455	0.6610	560	0.7709	665	0.3743	770	0.0163
460	0.5601	565	0.8075	670	0.3291	775	0.0138
465	0.4663	570	0.8490	675	0.2871	780	0.0127
470	0.3994	575	0.8884	680	0.2489		
475	0.3017	580	0.9267	685	0.2161		
480	0.2758	585	0.9579	690	0.1868		

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	2021-10-18	Test Ambient:	25.1 ° C
Model Number	9A19DIM/835/R	Stabilization Time (min)	90

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
RHL2110 1803-901	120.0	60	0.092	9.19	0.835	64.77

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	966.7
Luminous Efficacy (lm/W)	105.19
Beam Angle (°)	158.8
Center Beam Candle Power (cd)	166



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Zonal Lumen Tabulation

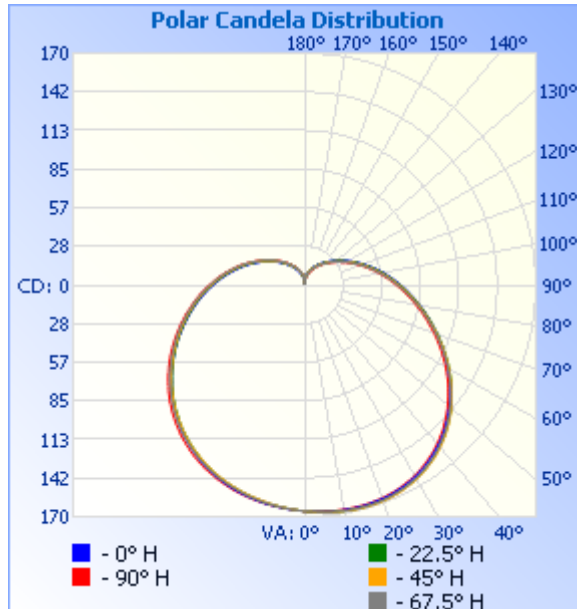
Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	136.0	14.1%	14.1%
0-40	231.3	23.9%	23.9%
0-60	451.9	46.7%	46.7%
60-90	287.5	29.7%	29.7%
70-100	248.0	25.6%	25.6%
90-120	160.6	16.6%	16.6%
0-90	739.3	76.5%	76.5%
90-180	227.4	23.5%	23.5%
0-180	966.7	100%	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	15.8	1.6%	90-100	68.0	7%
10-20	46.4	4.8%	100-110	53.2	5.5%
20-30	73.8	7.6%	110-120	39.5	4.1%
30-40	95.3	9.9%	120-130	27.8	2.9%
40-50	108.4	11.2%	130-140	18.5	1.9%
50-60	112.2	11.6%	140-150	11.4	1.2%
60-70	107.5	11.1%	150-160	6.1	0.6%
70-80	96.9	10.0%	160-170	2.6	0.3%
80-90	83.1	8.6%	170-180	0.4	0%

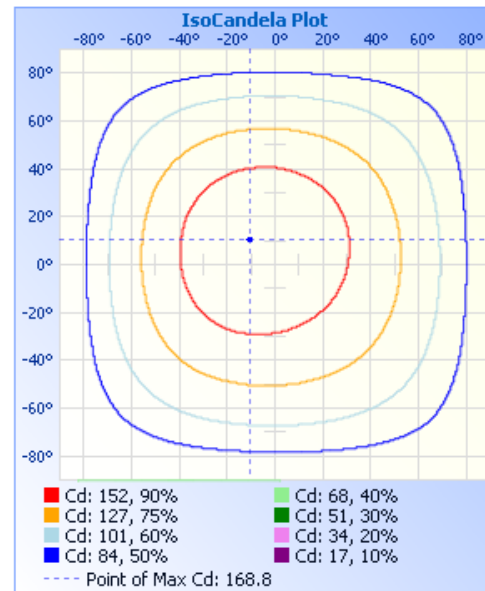
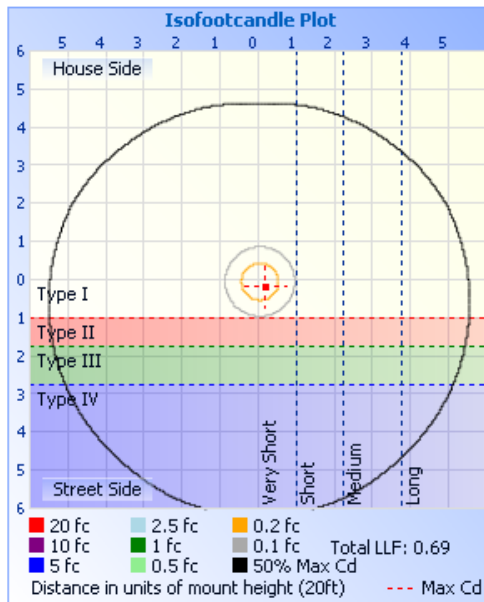
Photometric Data



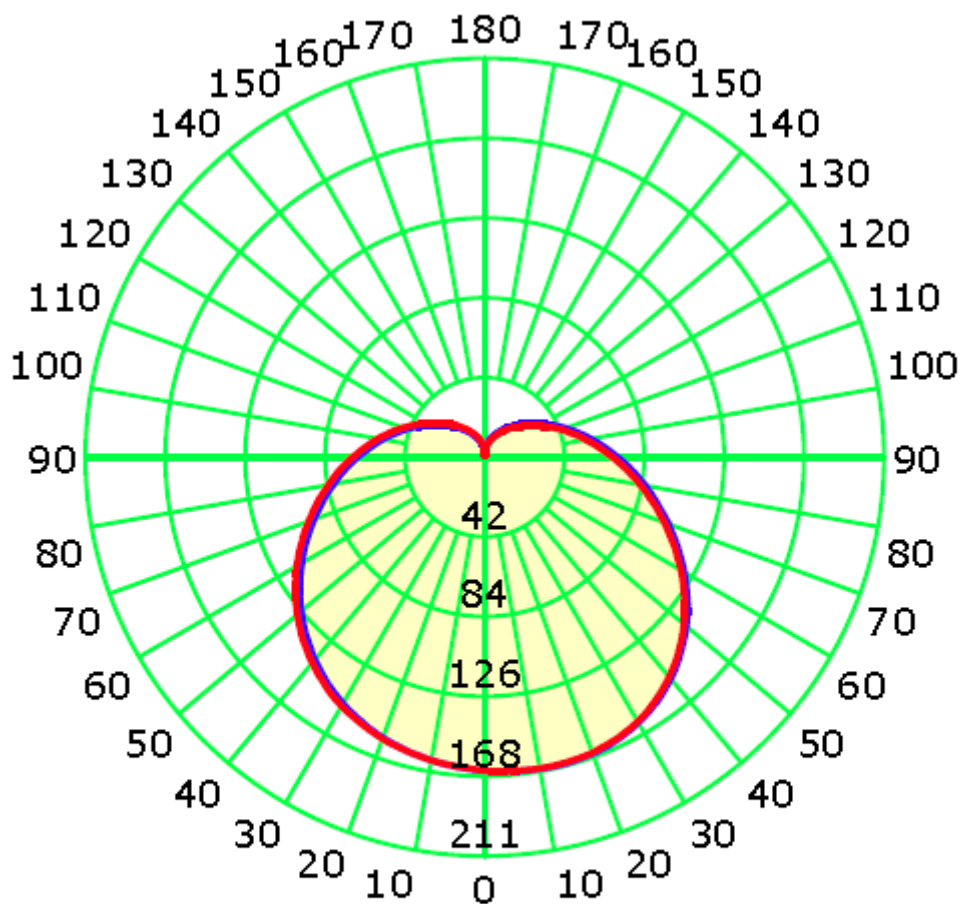
Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	0.57 fc	178.7 ft	181.7 ft
34.0ft	0.14 fc	357.4 ft	363.4 ft
51.0ft	0.06 fc	536.1 ft	545.0 ft
68.0ft	0.04 fc	714.8 ft	726.7 ft
85.0ft	0.02 fc	893.5 ft	908.4 ft
102.0ft	0.02 fc	1,072.3 ft	1,090.1 ft

■ Vert. Spread: 158.5°
 ■ Horiz. Spread: 158.8°



Luminous Intensity Distribution Curve



Unit: cd

Average Diffuse Angle(50%): 159.8°

— C0-C180 — C90-C270

	C0/C180	C90/C270	C45/C225	C135/315	Avg.
Field Angle	294.9	295	294.6	295.4	295.0
Beam Angle	159.5	160.1	159.2	160.7	159.9

**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
0	166	166	166	166	166	166	166	166	166	166	166	166	166	166	166	166	166
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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
www.hopestartest.com

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130	28	27	27	26	26	26	26	26	27	27	28	28	28	28	28	28	28
131	27	27	26	26	25	25	25	26	26	26	27	27	27	28	27	27	27

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132	26	26	25	25	25	25	25	25	25	26	26	27	27	27	27	26	26
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180	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1



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 *****