



Report No.: RHL21101801-9

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/827/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/827/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	2700K	
LED Manufacturer	Bridgelux Inc.	
LED Model	BXVN-XXE-13H-9HV	
Sample Number	RHL21101801-901	
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/827/R	Stabilization Time (min)	90

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
RHL2110 1801-901	120.0	60	0.086	8.49	0.82	68.2

Chromaticity Measurement - Sphere-Spectroradiometer Method:

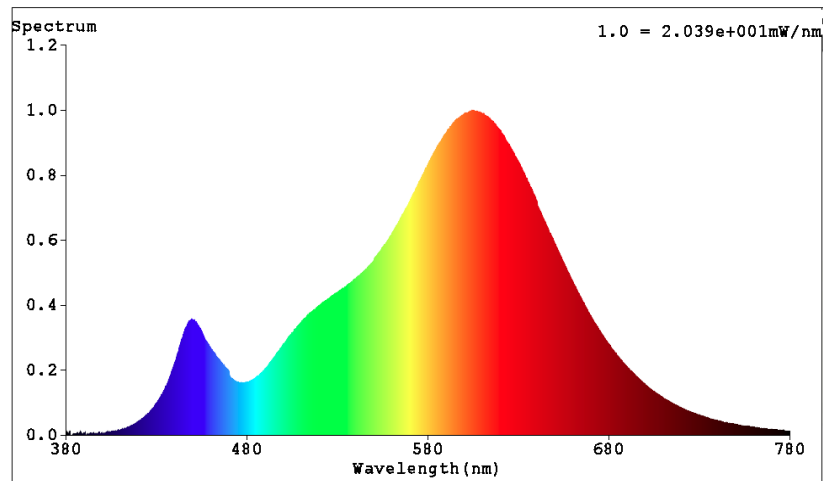
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	4
Frequency (Hz)	60	R2	91	R10	81
CCT (K)	2759	R3	95	R11	79
Duv	-0.001	R4	80	R12	78
Chromaticity (x, y)	x = 0.4536 y = 0.4067	R5	81	R13	83
Chromaticity (u', v')	u' = 0.2602 v' = 0.5249	R6	91	R14	98
Color Rendering Index (CRI)	81.9	R7	81	R15	72
R9	4	R8	56	--	--
Rf	85	--	--	--	--
Rg	96	--	--	--	--
Rcs,h1(%)	-12	--	--	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	934.29
Luminous Efficacy (lm/W)	110.05

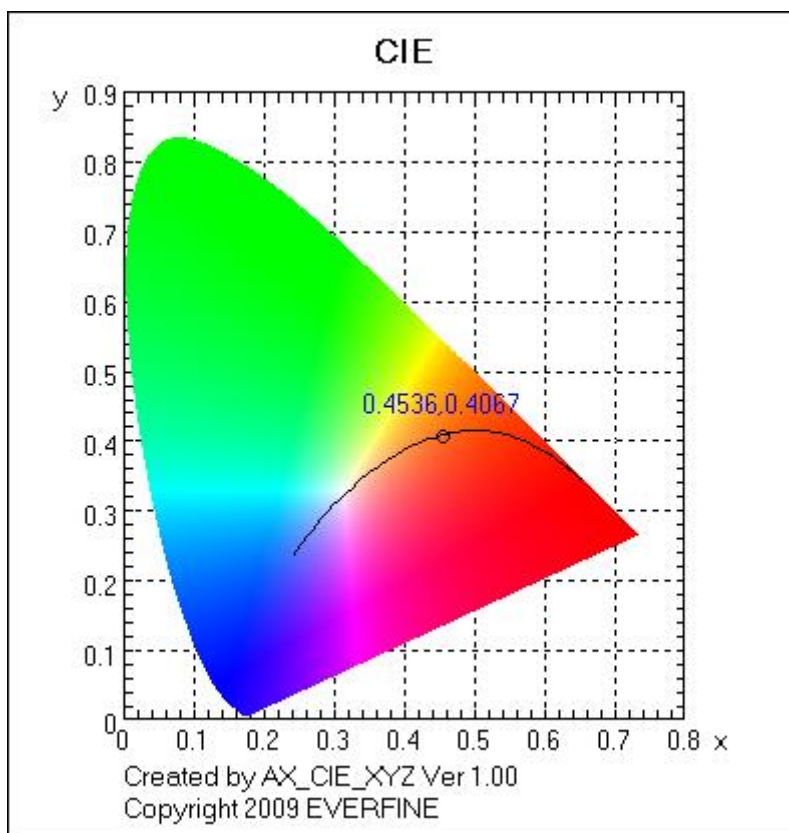


Relative Spectral Power Distribution

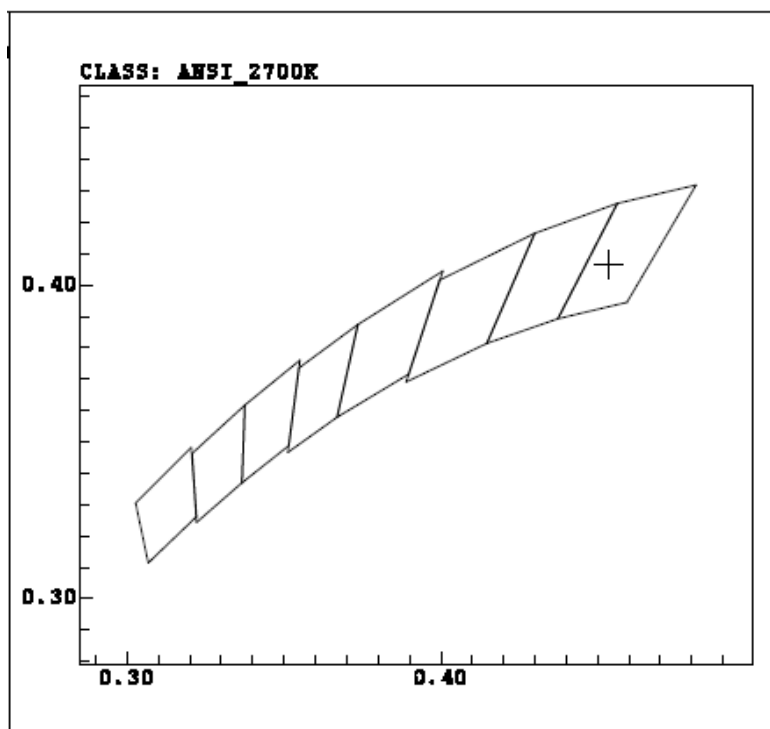


Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	0.0028	485	0.1779	590	0.9298	695	0.1827
385	0.0048	490	0.2041	595	0.9672	700	0.1575
390	0.0068	495	0.2386	600	0.9881	705	0.1345
395	0.0045	500	0.2792	605	0.9988	710	0.1152
400	0.0077	505	0.3151	610	0.9906	715	0.0982
405	0.0087	510	0.3478	615	0.9673	720	0.0846
410	0.0156	515	0.3768	620	0.9378	725	0.0720
415	0.0264	520	0.3986	625	0.8946	730	0.0624
420	0.0415	525	0.4197	630	0.8438	735	0.0527
425	0.0647	530	0.4395	635	0.7862	740	0.0453
430	0.0984	535	0.4569	640	0.7233	745	0.0385
435	0.1480	540	0.4800	645	0.6556	750	0.0330
440	0.2208	545	0.5063	650	0.5935	755	0.0282
445	0.3109	550	0.5358	655	0.5329	760	0.0245
450	0.3551	555	0.5781	660	0.4749	765	0.0206
455	0.3197	560	0.6179	665	0.4186	770	0.0180
460	0.2688	565	0.6689	670	0.3679	775	0.0151
465	0.2317	570	0.7186	675	0.3231	780	0.0137
470	0.1976	575	0.7764	680	0.2808		
475	0.1631	580	0.8317	685	0.2438		
480	0.1623	585	0.8858	690	0.2108		

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/827/R	Stabilization Time (min)	90

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
RHL2110 1801-901	120.0	60	0.0868	8.81	0.829	66.52

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	908.0
Luminous Efficacy (lm/W)	103.06
Beam Angle (°)	176.6
Center Beam Candle Power (cd)	140



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Zonal Lumen Tabulation

Zonal Lumen Summary

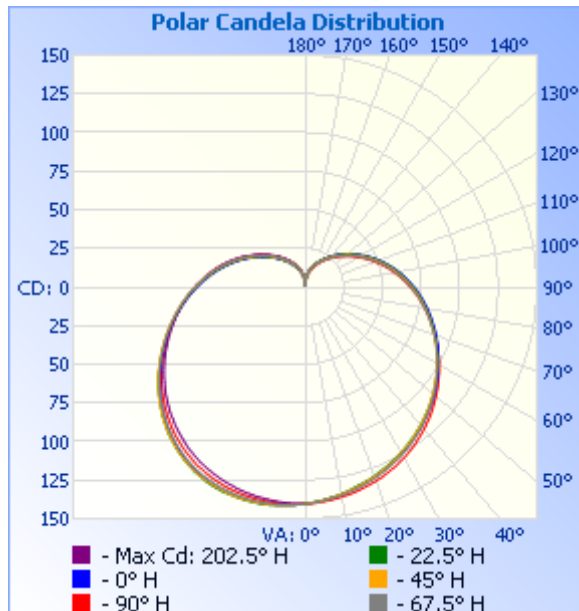
Zone	Lumens	% Lamp	% Luminaire
0-30	114.5	12.6%	12.6%
0-40	194.9	21.5%	21.5%
0-60	385.4	42.4%	42.4%
60-90	271.6	29.9%	29.9%
70-100	244.8	27%	27%
90-120	172.5	19%	19%
0-90	657.0	72.4%	72.4%
90-180	251.0	27.6%	27.6%
0-180	908.0	100%	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	13.3	1.5%	90-100	70.6	7.8%
10-20	39.1	4.3%	100-110	57.6	6.3%
20-30	62.1	6.8%	110-120	44.3	4.9%
30-40	80.4	8.9%	120-130	32.1	3.5%
40-50	92.5	10.2%	130-140	21.8	2.4%
50-60	98.0	10.8%	140-150	13.6	1.5%
60-70	97.4	10.7%	150-160	7.3	0.8%
70-80	91.7	10.1%	160-170	3.1	0.3%
80-90	82.5	9.1%	170-180	0.5	0.1%

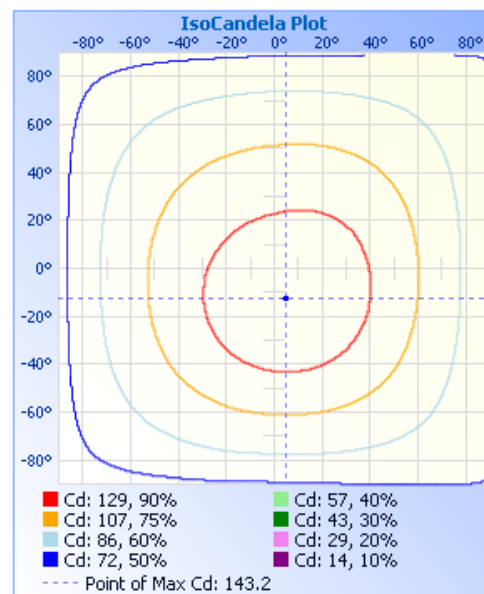
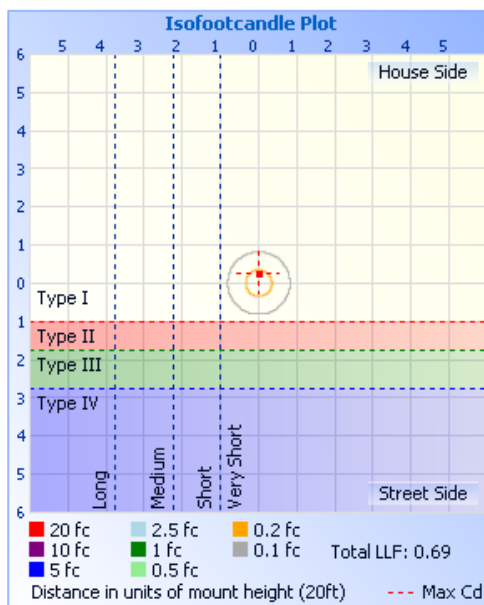


Photometric Data

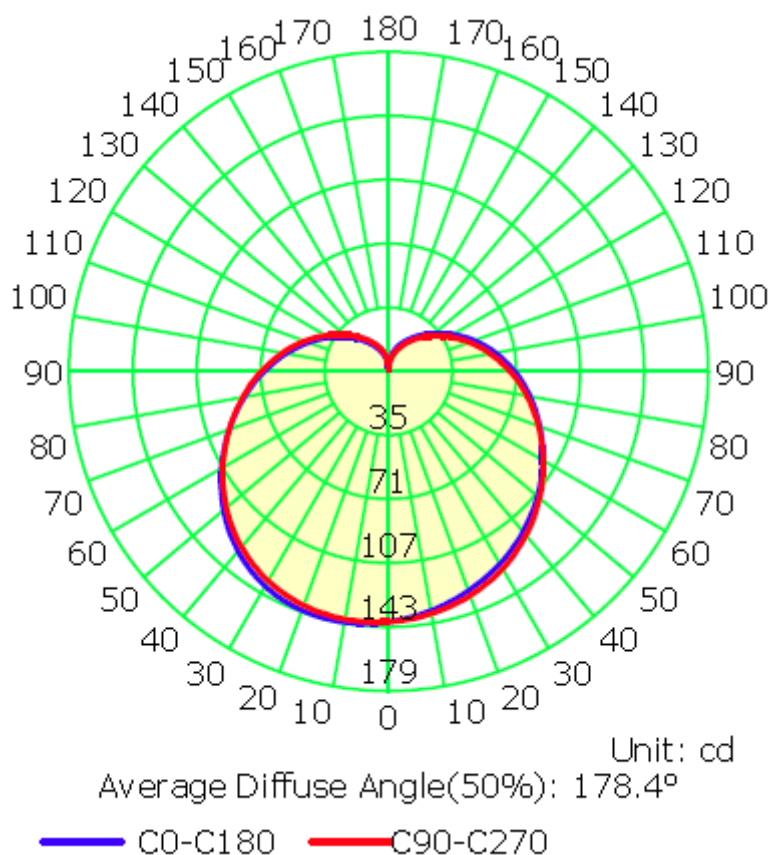


	Illuminance at a Distance	
	Center Beam fc	Beam Width
17.0ft	0.49 fc	1,840.2 ft 1,149.5 ft
34.0ft	0.12 fc	3,680.4 ft 2,299.0 ft
51.0ft	0.05 fc	5,520.5 ft 3,448.4 ft
68.0ft	0.03 fc	7,360.7 ft 4,597.9 ft
85.0ft	0.02 fc	9,200.9 ft 5,747.4 ft
102.0ft	0.01 fc	11,041.1 ft 6,896.9 ft

■ Vert. Spread: 177.9°
■ Horiz. Spread: 176.6°



Luminous Intensity Distribution Curve



	C0/C180	C90/C270	C45/C225	C135/315	Avg.
Field Angle	316.3	316.8	317.3	314.2	316.15
Beam Angle	178.1	178.7	177.4	179.6	178.45



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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	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140
1	140	140	140	140	140	140	140	140	140	141	141	141	140	140	140	140	140
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Laboratory: Hopestar Test Lab Limited, NVLAP Code: 600245-0
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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 *****