



Report No.: RHL21101805-9

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/850/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/850/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	5000K	
LED Manufacturer	Bridgelux Inc.	
LED Model	BXVN-XXE-13H-9HV	
Sample Number	RHL21101805-901	
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/850/R	Stabilization Time (min)	90

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
RHL2110 1805-901	120.0	60	0.088	8.74	0.828	66.8

Chromaticity Measurement - Sphere-Spectroradiometer Method:

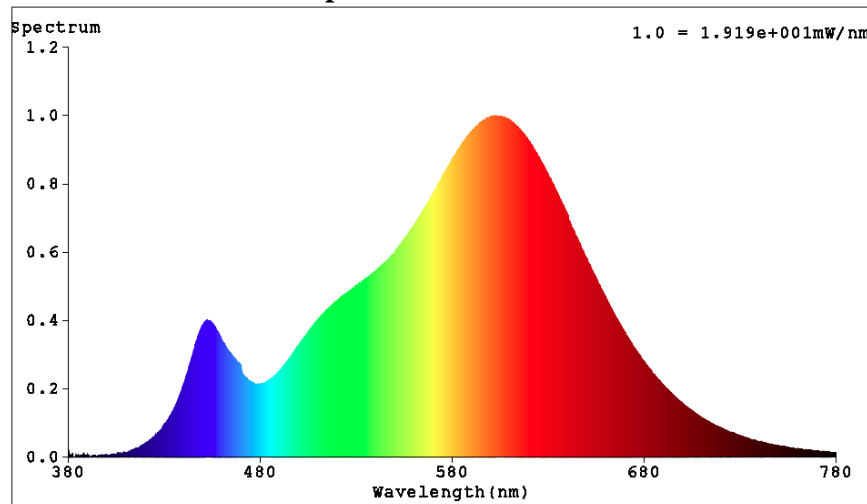
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	84	R9	18
Frequency (Hz)	60	R2	90	R10	76
CCT (K)	5062	R3	94	R11	84
Duv	0.0008	R4	85	R12	68
Chromaticity (x, y)	x = 0.3435 y = 0.3522	R5	85	R13	86
Chromaticity (u', v')	u' = 0.2101 v' = 0.4847	R6	86	R14	97
Color Rendering Index (CRI)	85.3	R7	88	R15	79
R9	18	R8	70	--	--
Rf	86	--	--	--	--
Rg	96	--	--	--	--
Rcs,h1(%)	-11	--	--	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	975.0
Luminous Efficacy (lm/W)	111.56

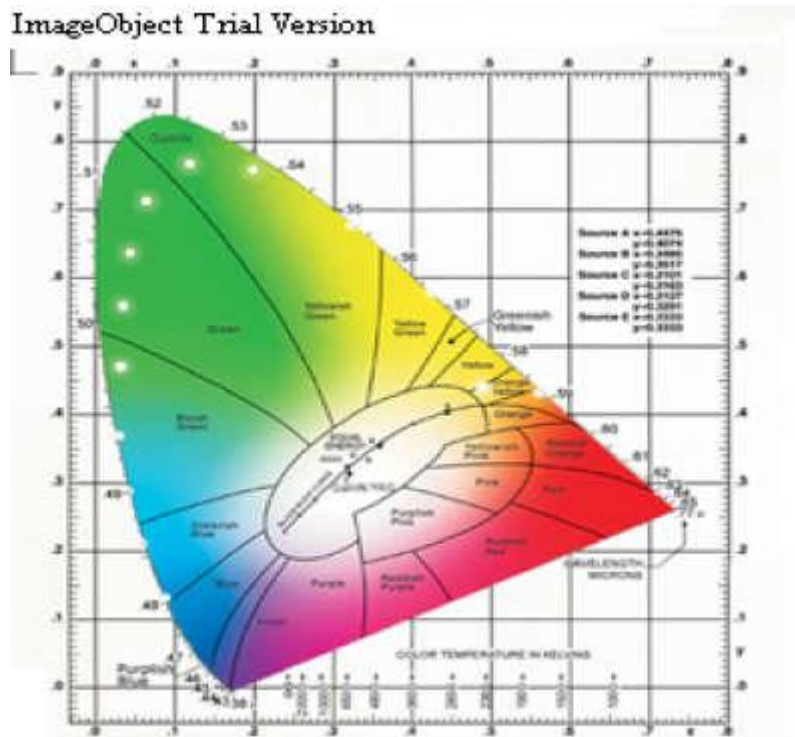


Relative Spectral Power Distribution

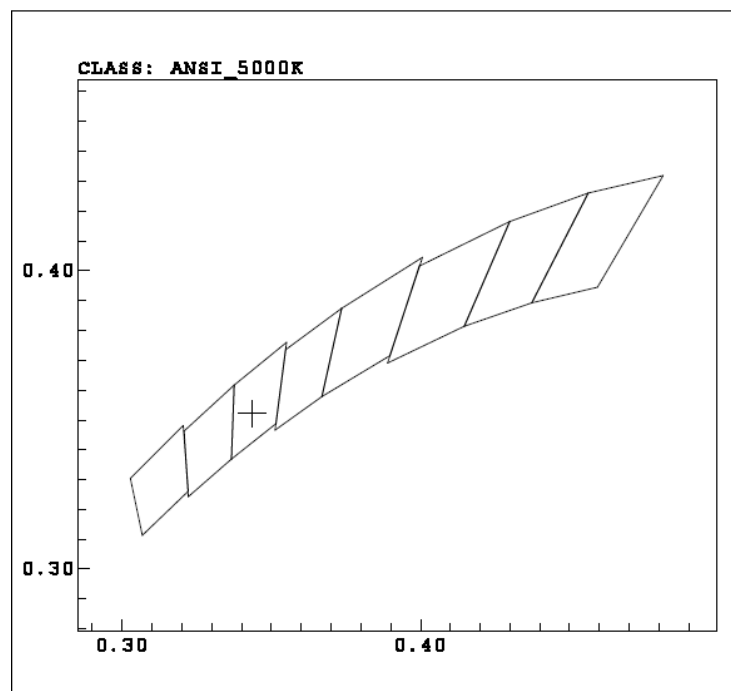


Spectral Distribution over Visible Wavelength							
WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)	WL(nm)	Radiant(Watts)
380	0.0138	485	0.3438	590	0.7244	695	0.1111
385	0.0073	490	0.3623	595	0.7191	700	0.0949
390	0.0088	495	0.4017	600	0.7072	705	0.0821
395	0.0090	500	0.4469	605	0.6895	710	0.0704
400	0.0150	505	0.4946	610	0.6647	715	0.0604
405	0.0211	510	0.5390	615	0.6356	720	0.0518
410	0.0323	515	0.5703	620	0.6030	725	0.0446
415	0.0570	520	0.5981	625	0.5660	730	0.0384
420	0.0933	525	0.6169	630	0.5287	735	0.0326
425	0.1513	530	0.6330	635	0.4861	740	0.0278
430	0.2423	535	0.6443	640	0.4462	745	0.0243
435	0.3699	540	0.6563	645	0.3973	750	0.0208
440	0.5455	545	0.6656	650	0.3592	755	0.0183
445	0.7684	550	0.6775	655	0.3209	760	0.0157
450	0.9628	555	0.6832	660	0.2851	765	0.0130
455	0.9808	560	0.6925	665	0.2522	770	0.0114
460	0.8207	565	0.7042	670	0.2214	775	0.0098
465	0.6647	570	0.7121	675	0.1946	780	0.0093
470	0.5560	575	0.7204	680	0.1690		
475	0.4015	580	0.7271	685	0.1475		
480	0.3510	585	0.7261	690	0.1271		

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/850/R	Stabilization Time (min)	90

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
RHL2110 1805-901	120.0	60	0.089	8.95	0.83	65.31

Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	945.4
Luminous Efficacy (lm/W)	105.63
Beam Angle (°)	160.1
Center Beam Candle Power (cd)	161



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Zonal Lumen Tabulation

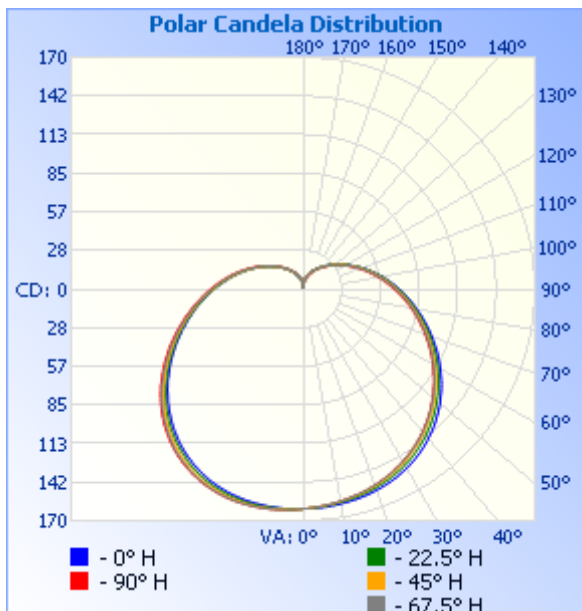
Zonal Lumen Summary

Zone	Lumens	% Lamp	% Luminaire
0-30	132.4	14%	14%
0-40	225.2	23.8%	23.8%
0-60	440.4	46.6%	46.6%
60-90	281.6	29.8%	29.8%
70-100	243.2	25.7%	25.7%
90-120	157.8	16.7%	16.7%
0-90	722.0	76.4%	76.4%
90-180	223.4	23.6%	23.6%
0-180	945.4	100%	100%

Lumens Per Zone

Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	15.4	1.6%	90-100	66.8	7.1%
10-20	45.2	4.8%	100-110	52.2	5.5%
20-30	71.9	7.6%	110-120	38.8	4.1%
30-40	92.8	9.8%	120-130	27.3	2.9%
40-50	105.7	11.2%	130-140	18.2	1.9%
50-60	109.5	11.6%	140-150	11.2	1.2%
60-70	105.2	11.1%	150-160	6.0	0.6%
70-80	94.9	10.0%	160-170	2.5	0.3%
80-90	81.5	8.6%	170-180	0.4	0%

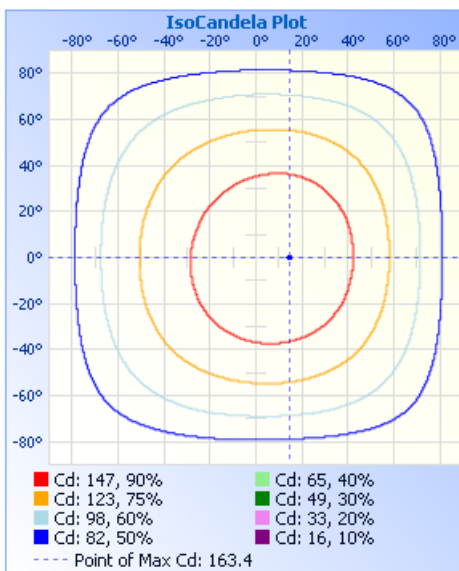
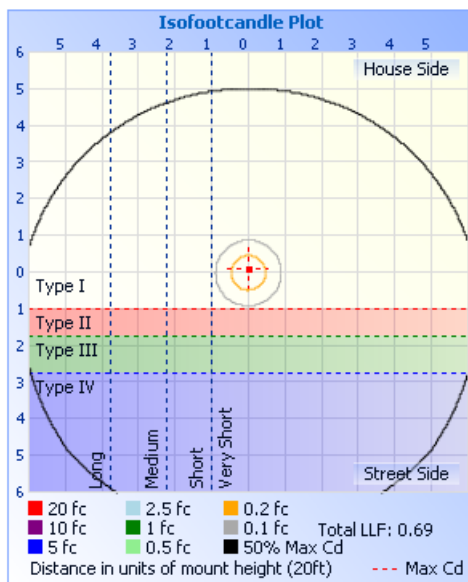
Photometric Data



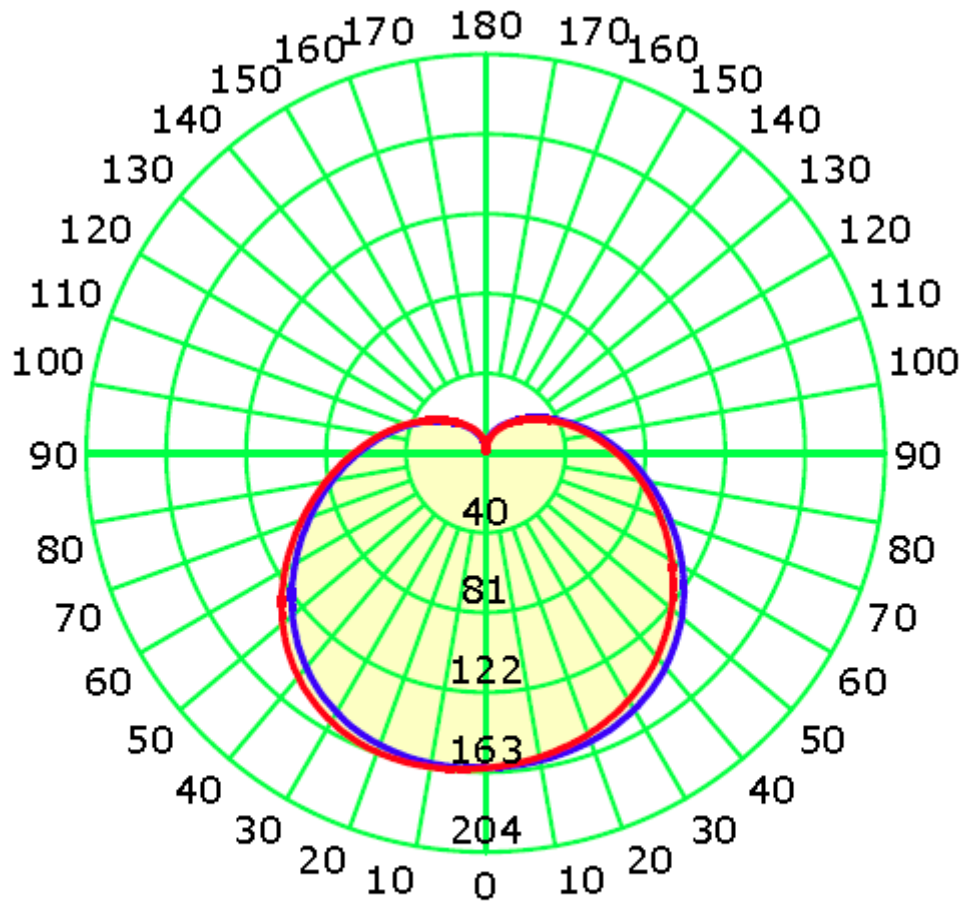
Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	0.56 fc	196.7 ft	193.4 ft
34.0ft	0.14 fc	393.4 ft	386.7 ft
51.0ft	0.06 fc	590.2 ft	580.1 ft
68.0ft	0.03 fc	786.9 ft	773.5 ft
85.0ft	0.02 fc	983.6 ft	966.8 ft
102.0ft	0.02 fc	1,180.3 ft	1,160.2 ft

■ Vert. Spread: 160.4°
■ Horiz. Spread: 160.1°



Luminous Intensity Distribution Curve



Unit: cd

Average Diffuse Angle(50%): 161.0°

— C0-C180 — C90-C270

	C0/C180	C90/C270	C45/C225	C135/315	Avg.
Field Angle	296.6	295.5	295.6	296.1	296.0
Beam Angle	162.0	160.0	160.3	161.5	161.0



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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	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161
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Laboratory: Hopestar Test Lab Limited, NVLAP Code: 600245-0
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131	27	27	27	27	26	26	25	25	25	25	25	25	26	26	26	27	27

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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 *****