

ENERGY STAR PROGRAM REQUIREMENTS FOR DOWNLIGHTS (VERSION 1.0)

MEASUREMENT AND TEST REPORT

For

GREEN CREATIVE LTD

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

Model: SLMFT9/9CCTS/DIM120V

Report Type: Original Report		Product Type: Downlight
Reviewed By:	Hill Liu	Hill Liu
Report Number:	2402Z22961E-EE	
Test Date:	2024-11-24 to 2024-12-03	
Report Date:	2024-12-27	
Approved by:	Blake Zhang / EE Engineer	
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Test Location 1:	Test facility was located at No.12, Pulong East 1 st Road, Tangxia Town, Dongguan, Guangdong, China.	
Test Location 2:	Test facility was located at Room 301, No.113, Pingkang Road, Dalang, Dongguan, Guangdong, China.	

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.(Shenzhen). This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, or any agency of the U.S. Government. *This report contains data that are not covered by the NVLAP accreditation.

TABLE OF CONTENTS

1.	GENERAL INFORMATION	3
1.1.	PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) #	3
1.2.	STATEMENT OF TRACEABILITY:	4
2.	SUMMARY OF TEST RESULT	5
3.	TEST RESULT	6
3.1.	DRIVER CASE TEMPERATURE AND IN SITU TMP _{LED} TEMPERATURE TEST	6
3.2.	PHOTOMETRIC AND ELECTRICAL MEASUREMENTS AT 25°C	9
3.3.	LUMINOUS INTENSITY DISTRIBUTION AND COLOR SPATIAL UNIFORMITY	11
3.4.	START TIME	16
3.5.	TRANSIENT PROTECTION	18
3.6.	OPERATING FREQUENCY	19
3.7.	FLICKER TEST	20
3.8.	DIMMING AND NOISE TEST	21
4.	EUT PHOTO	23
4.1.	EUT PHOTO	23
4.2.	LABELING	23
4.3.	LED SOURCE PHOTO	24
4.4.	LED DRIVER PHOTO	24
4.5.	DIMMER PHOTO	25
	ATTACHMENT A –LM-80 TEST REPORT AND TM-21 CALCULATOR	26
	ATTACHMENT B –LIGHT SOURCE FLICKER TEST DATA	26
	ATTACHMENT C - INSTRUCTIONS FOR COLOR TUNABLE	26
	DIRECTIONS	27

1. GENERAL INFORMATION

1.1. Product Description for Equipment under Test (EUT)

The client submitted 1 sample of model SLMFT9/9CCTS/DIM120V , Sample was numbered 2402Z22961E-S01. The test sample was in good condition and received on 2024-11-22. All tests and evaluations were performed at the most consumptive white light setting.

Model Tested:	SLMFT9/9CCTS/DIM120V
Manufacturer:	GREEN CREATIVE LTD
Product Designation:	LED Surface Mount Downlight
Rated Voltage/Frequency:	120V AC 50/60Hz
Rated Power:	15W
Nominal CCT:	2700K/3000K/3500K/4000K/5000K
Rated Life:	50000 hrs
Dimming:	Yes
Dimming Range:	10%-100%
Indoor and Outdoor:	Indoor use only
Connected Product:	No
Color Tunable:	White-Tunable
CCT Range:	2700K/3000K/3500K/4000K/5000K
Most Consumptive Setting:	3500K
Number of LED Components	130
Type of LED Components:	LED Package
Model of LED Components:	BXNN-(A)G-13H-9DN
Light Source Manufacturer:	Bridgelux Inc.
LM-80 Report:	Yes
The Number of LED Driver:	1
The Model of LED Driver:	LB015ANP-100C
Driver Manufacturer:	Zhejiang YanKon Group Co Ltd
Rated Maximum TMPc:	125°C
Replaceability of Driver:	Inseparable
Model of Dimmer Used During Test:	CTCL-153P
Brand of Dimmer:	LUTRON
Type of Dimmer:	Forward phase cut

1.2. Statement of Traceability:

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

2. SUMMARY OF TEST RESULT

Item	Measured	Verdict	Requirement
Efficacy(lm/W) ^{ΔΔ}	89.12	PASS	≥82 lm/W
Aperture(inch) ^{ΔΔ}	7.40	PASS	≤10 inch
Light Output(lm) ^{ΔΔ}	1317.1	PASS	For Aperture ≤4.5": ≥345 lm For Aperture >4.5": ≥575 lm
Zonal Lumen Density ^Δ	79.02%	PASS	Luminaire shall deliver a minimum of 75% of total initial lumens within the 0°- 60° zone (axially symmetric about the nadir).
CCT (K) ^{ΔΔ}	3473	PASS	The luminaire shall fall within the corresponding 7-step chromaticity quadrangles as defined in ANSI C78.377-2017 (R2022).
R _a ^{ΔΔ}	95.5	PASS	R _a ≥80
R _g ^{ΔΔ}	73	PASS	R _g >0
Color Angular Uniformity ^Δ	Complied	PASS	Throughout the beam angle, the variation of chromaticity shall be within a total linear distance of 0.006 from the weighted average point on the CIE 1976(u',v') diagram.
Lumen Maintenance Life ^{iiΔΔ}	>102000 hours See Attachment A	PASS	≥25,000 hours
Color Maintenance ^{iiiΔΔ}	See Attachment A	PASS	≤0.007 (In LM-80 test report)
Start Time(ms) ^{ΔΔ}	94.00	PASS	Light source shall remain continuously illuminated within 750 milliseconds of application of electrical power.
Power Factor ^{ΔΔ}	0.9289	PASS	≥ 0.7
Transient Protection ^{ΔΔ}	See tables	PASS	Sample shall survive after seven strikes
Standby Power (W) ^{ΔΔ}	N/A	PASS ^{iv}	Luminaires shall not draw power in the off state.
Operating Frequency (Hz) ^{iΔΔ}	120.000	PASS	≥ 120 Hz
P _{st} ^{ΔΔ}	0.160	N/A	Optional: ≤1.0
SVM ^{ΔΔ}	0.310	N/A	Optional: For indoor use: ≤1.6
Dimming ^{iΔΔ}	See tables	PASS	Provide continuous dimming from 100% to 20%
Noise(dBA) ^{iΔΔ}	19.6	PASS	≤ 24 dBA at 1 meter or less at the minimum output
Driver Case Temperature(°C) ^{ΔΔ}	52.6	PASS	The measured driver case temperature at thermal equilibrium shall not exceed the driver manufacturer's maximum recommended temperature 125°C during in situ operation.

Note:

- i. Operating frequency, dimming, and noise test are not accredited by the NVLAP.
 - ii. TM-21 calculator is used to calculate the L₇₀ life. Test data from LM-80 test report of LED light source was used.
 - iii. Color Maintenance referenced to LM-80 test report of LED light source.
 - iv. According to IEC 62301-2011, This *Type A* product has no secondary function load and no power switch.
- ^Δ Test facility was located at No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.
^{ΔΔ} Test facility was located at Room 301, No.113, Pingkang Road, Dalang, Dongguan, Guangdong, China.

3. TEST RESULT

3.1. Driver Case Temperature and in Situ TMP_{LED} Temperature Test

Test Method and ENERGY STAR Requirements:

ANSI/UL 1598-2008: Standard for Safety of Luminaires

ENERGY STAR Requirements:

In the sample luminaire, the in situ TMP_{LED} temperature is less than or equal to the temperature specified in the LM-80 test report for the corresponding or higher drive current, within the manufacturer's specified operating current range.

The drive current measured in the luminaire is less than or equal to the drive current specified in the LM-80 test report at the corresponding temperature or higher.

At the temperature measurement point for the hottest location on the driver case (TMP_c as detailed by the driver manufacturer), the measured driver case temperature at thermal equilibrium shall not exceed the driver manufacturer's maximum recommended temperature during in situ (installed in the luminaire) operation.

Test Procedure:

One sample was mounted according to ANSI/UL 1598-2008 and operated until constant temperatures were obtained. A temperature was considered constant if the sample was operating for at least three hours and upon three successive readings - taken at 15 minute intervals - were within one degree and were not rising. The sample was connected to a 120V, 60 Hz source of supply.

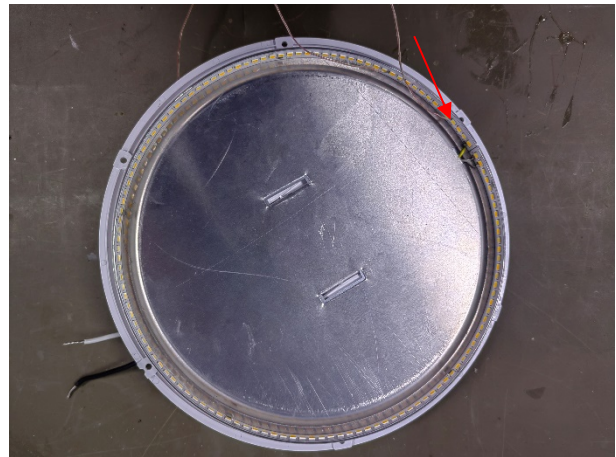
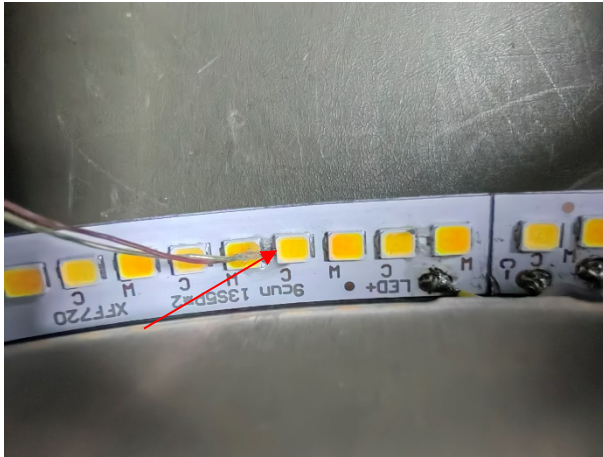
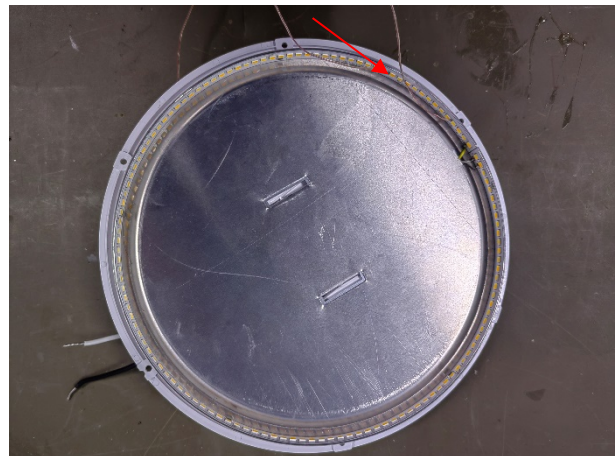
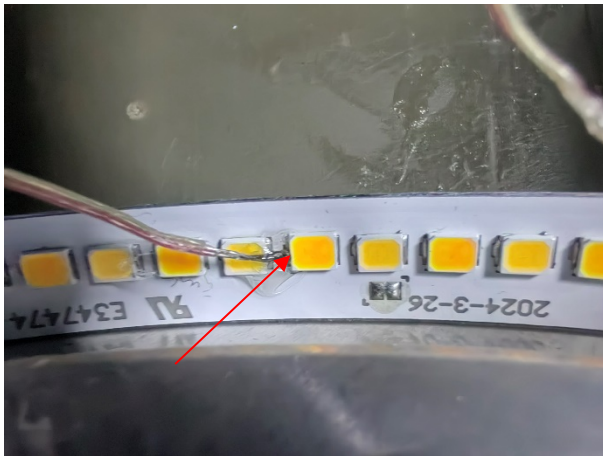
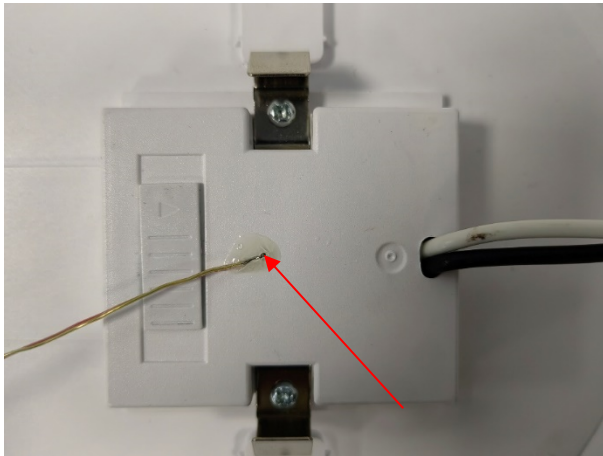
Thermocouples were attached at locations described in the results by means of a cement made of water glass and Fuller's earth, solder, or epoxy. The drive current of LED package/module/ array was calculated as the total output current of the driver measured by multimeter, divided by the number of branches in parallel of LEDs.

Test Equipment:

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
Multimeter	FLUKE	115C	N/A	2024-07-25	2025-07-24
Hybrid Recorder	YOKOGAWA	DR240	10#	2024-07-25	2025-07-24
AC POWER SUPPLY	HengPu	HPA 1103	0003394	2024-07-25	2025-07-24

Uncertainty:

The uncertainty of the temperature is $U=0.8^{\circ}\text{C}$ ($K=2$), at the 95% confidence level.

Test Data:**Temperature measurement point of LED light source (TMP_{LED#1})****Temperature measurement point of LED light source (TMP_{LED#2})****Temperature measurement point of driver (TMP_d)**

Sample No.	2402Z22961E-S01
Type of Thermocouples:	K
Test Duration	≥ 3.5 hours
Maximum Recommended Driver Case Temperature	125°C
Test Location	Test Result
TMP _{LED#1}	72.9°C
TMP _{LED#2}	75.1°C
TMP _c	52.6°C
Driver Current of LED	Test Result
IF (mA) _{#1}	8.0mA
IF (mA) _{#2}	10.2mA

See attachment A: LM-80 test report and TM-21 calculator.

3.2. Photometric and Electrical Measurements at 25°C

Test Method and ENERGY STAR Requirements:

IES LM-79-08: Approved Method: Electrical & Photometric Measurement of Solid-state Lighting Products

ANSI C82.77-10:2021: Lighting Equipment - Harmonic Emission Limits - Related Power Quality Requirements

CIE Pub. No. 13.3-1995: Method of Measuring and Specifying Color Rendering of Light Sources

CIE Pub. No. 15:2004: Colorimetry

ENERGY STAR Requirement:

Luminaire Efficacy: $\geq 82 \text{ lm/W}$;

Luminaire Minimum Light Output: $\leq 4.5''$ aperture: 345 lumens ; $> 4.5''$ aperture: 575 lumens

CCT Requirements: fall within a 7-step chromaticity quadrangles for CCT: 2200K, 2500K, 2700K, 3000K, 3500K, 4000K, 5000K

CRI Requirements: $R_a \geq 80$, $R_9 > 0$

Power Factor Requirements: ≥ 0.7

Test Procedure:

The photometric tests were performed after the lamps were seasoned. Spectral radiant flux measurements are made using Spectroradiometer attached to the detector port of the integrating sphere. Each lamp is operated at rated voltage in its designated orientation. Each lamp is allowed to stabilize from 30 min to 2 or more hours before measurements are made. Luminous flux, chromaticity coordinates, correlated color temperature, u' , v' and color rendering index for each lamp are calculated from the spectral radiant flux measurements taken at no more 5 nm intervals over the range 380 to 780 nm. The calibration of the sphere photometer-spectroradiometer system is traceable to The National Metrology Institute of China, NIM. Lamp efficacy (lumens per watts) for each lamp model is computed based on this luminous flux result. Electrical measurements including voltage, current, power, power factor and harmonic analysis are measured using the Digital Power Analyzer.

Test Equipment:

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
2.0m integrating sphere	EVERFINE	R98	11010018	2024-07-25	2025-07-24
spectroradiometer	EVERFINE	HAAS-2000	G112048TS81331121	2024-07-25	2025-07-24
Digital Power Meter	EVERFINE	PF2010A	1011004	2024-07-25	2025-07-24
Digital CC&CV DC Power Supply	EVERFINE	WY305-V1	1101047	2024-07-25	2025-07-24
Standard Light Source	EVERFINE	D204	N/A	2023-05-12	2025-05-11
Special zero-voltage synchronous switching AC	EVERFINE	DPS1010-YF	1011001T	2024-07-25	2025-07-24

Uncertainty:

The uncertainty of the light output (luminous flux) measurements is $U_{rel}=2.1\%$ ($k=2$), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is $U=22K$ ($k=2$), at the 95% confidence level. The uncertainty of the CRI is $U=2.1(k=2)$, at the 95% confidence level.

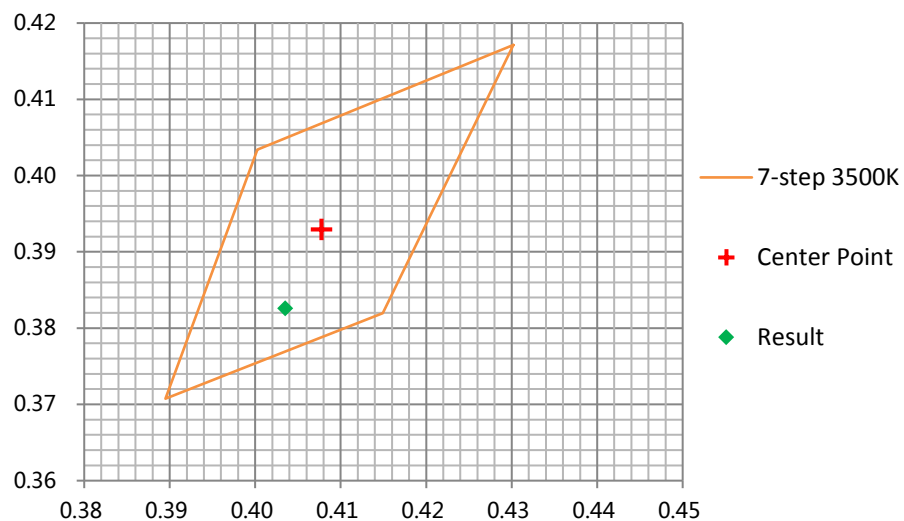
The uncertainty of power meter AC current $U_{rel}=0.19\%$ of rdg, AC Voltage $U_{rel}=0.18\%$ of rdg, Power $U_{rel}=0.46\%$ ($k=2$), at the 95% confidence level.

Test Data at Control setting: 3500K

Photometric and Electrical Measurements at 25 °C

Sample No.	Voltage(V)	Current(A)	Power(W)	Power Factor	Luminous Flux (lm)	Efficacy (lm/W)	CCT(K)
2402Z22961E-S01	120.1	0.1325	14.78	0.9289	1317.1	89.12	3473

Sample No.	R _a	R ₉	x	y	u'	v'	Duv
2402Z22961E-S01	95.5	73	0.4035	0.3826	0.2379	0.5076	-0.0032



3.3. Luminous Intensity Distribution and Color Spatial Uniformity

Test Method and ENERGY STAR Requirements:

IES LM-79-08: Approved Method: Electrical & Photometric Measurement of Solid-state Lighting Products

ANSI/IES LM-58:2020: Method for Spectroradiometric Measurement Methods for Light Sources

CIE Pub. No. 15:2004: Colorimetry

ENERGY STAR Requirements:

Luminaire Zonal Lumen Density: Luminaire shall deliver a minimum of 75% of total initial lumens within the 0-60° zone (axially symmetric about the nadir)

Test Procedure:

Luminous Intensity & Color Distribution was measured by goniophotometer system at 25°C±1°C. One sample was measured and operated at downward orientation. Sample was operated at rated voltage and was tested after stabilized. System was calibrated by standard light source before measurement.

Test Equipment:

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
AC POWER SUPPLY	EVERFINE	VPS1030 PWM	1012017	2024-07-25	2025-07-24
Digital CC&CV DC Power Supply	EVERFINE	WY12010	1009009	2024-07-25	2025-07-24
Digital power meter	YOKOGAWA	WT-210	91j926132	2024-07-25	2025-07-24
full-field speed goniophotometer	EVERFINE	GO-R5000	YG108492N10120001	2024-07-25	2025-07-24
wireless remote thermohygrometer	N/A	AOK-5017B	N/A	2024-07-25	2025-07-24
Standard Light Source	EVERFINE	D908	N/A	2023-05-12	2025-05-11

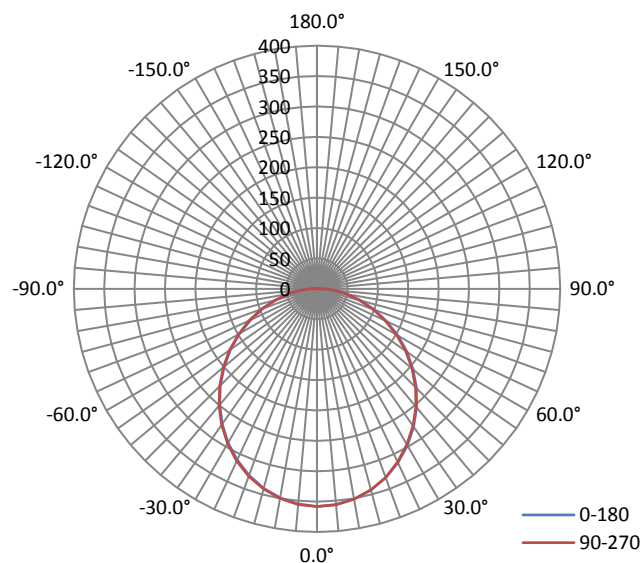
Uncertainty:

The uncertainty of the luminous intensity is U=2.00% (K=2), at the 95% confidence level.

Test Data:

Sample Number: 2402Z22961E-S01

Luminous Intensity Distribution Diagram



Orientation	Beam Angle(°)	I _{max} (cd)
Downward	110.0	472.9

Zonal Lumen Density

Deg	Flux (lm)	%	Deg	Flux (lm)	%
0-5	11.3	0.85	0-95	1319.2	100.00
0-10	44.7	3.39	0-100	1319.2	100.00
0-15	99.0	7.50	0-105	1319.2	100.00
0-20	172.2	13.05	0-110	1319.2	100.00
0-25	261.8	19.84	0-115	1319.2	100.00
0-30	364.5	27.63	0-120	1319.2	100.00
0-35	476.7	36.14	0-125	1319.2	100.00
0-40	594.5	45.07	0-130	1319.2	100.00
0-45	713.9	54.12	0-135	1319.2	100.00
0-50	830.9	62.98	0-140	1319.2	100.00
0-55	941.6	71.37	0-145	1319.2	100.00
0-60	1042.4	79.02	0-150	1319.2	100.00
0-65	1130.2	85.67	0-155	1319.2	100.00
0-70	1202.4	91.14	0-160	1319.2	100.00
0-75	1257.2	95.30	0-165	1319.2	100.00
0-80	1294.2	98.11	0-170	1319.2	100.00
0-85	1314.0	99.61	0-175	1319.2	100.00
0-90	1319.2	100.00	0-180	1319.2	100.00

Color Spatial Uniformity

Average Weighted
u': 0.2370, v': 0.5078

$y \setminus C0-180$	u'	v'	$Du'v'$	$y \setminus C90-270$	u'	v'	$Du'v'$
-60	0.2366	0.5076	0.0004	-60	0.2367	0.5075	0.0004
-59	0.2367	0.5077	0.0003	-59	0.2369	0.5075	0.0003
-58	0.2367	0.5077	0.0003	-58	0.2368	0.5075	0.0004
-57	0.2367	0.5077	0.0003	-57	0.2368	0.5075	0.0004
-56	0.2367	0.5077	0.0003	-56	0.2368	0.5075	0.0004
-55	0.2367	0.5077	0.0003	-55	0.2369	0.5075	0.0003
-54	0.2367	0.5078	0.0003	-54	0.2369	0.5075	0.0003
-53	0.2367	0.5077	0.0003	-53	0.2369	0.5075	0.0003
-52	0.2367	0.5078	0.0003	-52	0.2369	0.5075	0.0003
-51	0.2368	0.5077	0.0002	-51	0.2369	0.5076	0.0002
-50	0.2368	0.5078	0.0002	-50	0.2369	0.5076	0.0002
-49	0.2370	0.5078	0.0000	-49	0.2369	0.5076	0.0002
-48	0.2369	0.5078	0.0001	-48	0.2370	0.5076	0.0002
-47	0.2369	0.5078	0.0001	-47	0.2369	0.5077	0.0001
-46	0.2369	0.5078	0.0001	-46	0.2370	0.5076	0.0002
-45	0.2370	0.5078	0.0000	-45	0.2370	0.5077	0.0001
-44	0.2370	0.5078	0.0000	-44	0.2371	0.5077	0.0001
-43	0.2371	0.5078	0.0001	-43	0.2370	0.5078	0.0000
-42	0.2370	0.5079	0.0001	-42	0.2370	0.5077	0.0001
-41	0.2371	0.5078	0.0001	-41	0.2371	0.5077	0.0001
-40	0.2370	0.5079	0.0001	-40	0.2370	0.5078	0.0000
-39	0.2370	0.5079	0.0001	-39	0.2370	0.5078	0.0000
-38	0.2370	0.5079	0.0001	-38	0.2370	0.5078	0.0000
-37	0.2370	0.5079	0.0001	-37	0.2370	0.5078	0.0000
-36	0.2370	0.5079	0.0001	-36	0.2370	0.5078	0.0000
-35	0.2370	0.5080	0.0002	-35	0.2370	0.5078	0.0000
-34	0.2370	0.5080	0.0002	-34	0.2370	0.5078	0.0000
-33	0.2370	0.5080	0.0002	-33	0.2370	0.5078	0.0000
-32	0.2371	0.5080	0.0002	-32	0.2370	0.5078	0.0000
-31	0.2371	0.5080	0.0002	-31	0.2370	0.5078	0.0000
-30	0.2371	0.5080	0.0002	-30	0.2370	0.5078	0.0000
-29	0.2371	0.5080	0.0002	-29	0.2370	0.5078	0.0000
-28	0.2371	0.5080	0.0002	-28	0.2370	0.5079	0.0001
-27	0.2371	0.5080	0.0002	-27	0.2370	0.5079	0.0001
-26	0.2371	0.5080	0.0002	-26	0.2370	0.5079	0.0001
-25	0.2371	0.5080	0.0002	-25	0.2370	0.5079	0.0001
-24	0.2370	0.5080	0.0002	-24	0.2370	0.5079	0.0001
-23	0.2370	0.5080	0.0002	-23	0.2370	0.5079	0.0001
-22	0.2370	0.5080	0.0002	-22	0.2370	0.5079	0.0001
-21	0.2370	0.5080	0.0002	-21	0.2370	0.5079	0.0001
-20	0.2370	0.5080	0.0002	-20	0.2370	0.5079	0.0001
-19	0.2370	0.5080	0.0002	-19	0.2370	0.5079	0.0001
-18	0.2370	0.5080	0.0002	-18	0.2370	0.5079	0.0001
-17	0.2370	0.5080	0.0002	-17	0.2370	0.5079	0.0001
-16	0.2370	0.5080	0.0002	-16	0.2370	0.5079	0.0001
-15	0.2370	0.5080	0.0002	-15	0.2370	0.5079	0.0001
-14	0.2370	0.5080	0.0002	-14	0.2370	0.5079	0.0001
-13	0.2370	0.5080	0.0002	-13	0.2370	0.5079	0.0001
-12	0.2370	0.5080	0.0002	-12	0.2369	0.5079	0.0001
-11	0.2370	0.5080	0.0002	-11	0.2370	0.5079	0.0001
-10	0.2369	0.5080	0.0002	-10	0.2370	0.5079	0.0001
-9	0.2369	0.5080	0.0002	-9	0.2369	0.5079	0.0001
-8	0.2370	0.5080	0.0002	-8	0.2369	0.5079	0.0001
-7	0.2370	0.5080	0.0002	-7	0.2369	0.5079	0.0001
-6	0.2369	0.5080	0.0002	-6	0.2369	0.5079	0.0001
-5	0.2369	0.5080	0.0002	-5	0.2369	0.5079	0.0001
-4	0.2369	0.5080	0.0002	-4	0.2368	0.5080	0.0003
-3	0.2369	0.5081	0.0003	-3	0.2370	0.5080	0.0002

Color Spatial Uniformity

Average Weighted
u': 0.2370, v': 0.5078

$y \setminus C0-180$	u'	v'	Du'v'	$y \setminus C90-270$	u'	v'	Du'v'
-2	0.2369	0.5081	0.0003	-2	0.2369	0.5080	0.0002
-1	0.2369	0.5081	0.0003	-1	0.2370	0.5080	0.0002
0	0.2369	0.5081	0.0003	0	0.2369	0.5081	0.0003
1	0.2370	0.5080	0.0002	1	0.2368	0.5081	0.0004
2	0.2369	0.5081	0.0003	2	0.2370	0.5080	0.0002
3	0.2369	0.5081	0.0003	3	0.2370	0.5079	0.0001
4	0.2369	0.5080	0.0002	4	0.2369	0.5080	0.0002
5	0.2369	0.5080	0.0002	5	0.2370	0.5079	0.0001
6	0.2369	0.5080	0.0002	6	0.2370	0.5079	0.0001
7	0.2369	0.5080	0.0002	7	0.2370	0.5079	0.0001
8	0.2369	0.5080	0.0002	8	0.2370	0.5079	0.0001
9	0.2369	0.5080	0.0002	9	0.2370	0.5079	0.0001
10	0.2369	0.5080	0.0002	10	0.2370	0.5080	0.0002
11	0.2369	0.5079	0.0001	11	0.2371	0.5080	0.0002
12	0.2370	0.5079	0.0001	12	0.2370	0.5079	0.0001
13	0.2370	0.5079	0.0001	13	0.2371	0.5080	0.0002
14	0.2370	0.5079	0.0001	14	0.2371	0.5080	0.0002
15	0.2369	0.5079	0.0001	15	0.2371	0.5080	0.0002
16	0.2370	0.5079	0.0001	16	0.2372	0.5080	0.0003
17	0.2370	0.5079	0.0001	17	0.2372	0.5080	0.0003
18	0.2370	0.5079	0.0001	18	0.2372	0.5080	0.0003
19	0.2370	0.5079	0.0001	19	0.2372	0.5080	0.0003
20	0.2370	0.5079	0.0001	20	0.2371	0.5080	0.0002
21	0.2370	0.5079	0.0001	21	0.2372	0.5080	0.0003
22	0.2370	0.5079	0.0001	22	0.2372	0.5080	0.0003
23	0.2370	0.5079	0.0001	23	0.2372	0.5080	0.0003
24	0.2370	0.5079	0.0001	24	0.2372	0.5080	0.0003
25	0.2370	0.5079	0.0001	25	0.2372	0.5080	0.0003
26	0.2370	0.5079	0.0001	26	0.2372	0.5080	0.0003
27	0.2370	0.5079	0.0001	27	0.2372	0.5080	0.0003
28	0.2370	0.5079	0.0001	28	0.2372	0.5080	0.0003
29	0.2370	0.5079	0.0001	29	0.2372	0.5080	0.0003
30	0.2370	0.5079	0.0001	30	0.2372	0.5080	0.0003
31	0.2370	0.5079	0.0001	31	0.2372	0.5079	0.0002
32	0.2370	0.5078	0.0000	32	0.2372	0.5079	0.0002
33	0.2370	0.5078	0.0000	33	0.2372	0.5079	0.0002
34	0.2371	0.5078	0.0001	34	0.2372	0.5080	0.0003
35	0.2370	0.5078	0.0000	35	0.2372	0.5079	0.0002
36	0.2370	0.5078	0.0000	36	0.2373	0.5079	0.0003
37	0.2370	0.5078	0.0000	37	0.2372	0.5079	0.0002
38	0.2370	0.5078	0.0000	38	0.2373	0.5079	0.0003
39	0.2370	0.5078	0.0000	39	0.2372	0.5079	0.0002
40	0.2370	0.5078	0.0000	40	0.2372	0.5079	0.0002
41	0.2369	0.5077	0.0001	41	0.2372	0.5078	0.0002
42	0.2369	0.5078	0.0001	42	0.2372	0.5078	0.0002
43	0.2369	0.5077	0.0001	43	0.2371	0.5078	0.0001
44	0.2369	0.5078	0.0001	44	0.2371	0.5079	0.0001
45	0.2369	0.5076	0.0002	45	0.2371	0.5078	0.0001
46	0.2369	0.5076	0.0002	46	0.2372	0.5078	0.0002
47	0.2368	0.5076	0.0003	47	0.2370	0.5078	0.0000
48	0.2368	0.5076	0.0003	48	0.2370	0.5078	0.0000
49	0.2367	0.5076	0.0004	49	0.2372	0.5077	0.0002
50	0.2368	0.5076	0.0003	50	0.2370	0.5077	0.0001
51	0.2367	0.5075	0.0004	51	0.2369	0.5076	0.0002
52	0.2366	0.5075	0.0005	52	0.2370	0.5077	0.0001
53	0.2367	0.5075	0.0004	53	0.2370	0.5076	0.0002
54	0.2366	0.5075	0.0005	54	0.2370	0.5077	0.0001
55	0.2367	0.5075	0.0004	55	0.2369	0.5076	0.0002

Color Spatial Uniformity

Average Weighted
 u' : 0.2370, v' :0.5078

$\gamma \setminus C0-180$	u'	v'	$Du'v'$	$\gamma \setminus C90-270$	u'	v'	$Du'v'$
56	0.2366	0.5073	0.0006	56	0.2369	0.5075	0.0003
57	0.2366	0.5074	0.0006	57	0.2369	0.5076	0.0002
58	0.2368	0.5074	0.0004	58	0.2369	0.5076	0.0002
59	0.2367	0.5074	0.0005	59	0.2369	0.5076	0.0002
60	0.2366	0.5073	0.0006	60	0.2368	0.5075	0.0004

3.4. Start Time

Test Method and ENERGY STAR Requirements:

Test Method

ENERGY STAR Test Method: Start Time Test

ENERGY STAR Requirement:

Light source shall remain continuously illuminated within 750 ms (1 second for connected product) of application of electrical power.

Test Procedure:

Integrating sphere, oscilloscope, photocell were used during start time test.

Luminaires were stored at $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for a minimum of 16 hours prior to the test, after which the temperature range was $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ for at least two hours immediately prior to the test. Luminaires were tested at rated voltage/frequency in an ambient temperature of $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The start time is defined as, the time between the application of power to the DUT and the point where the light source is continuously illuminated, and the light output is either constant or increasing.

Test Equipment:

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
2.0m integrating sphere	EVERFINE	R98	11010018	2024-07-25	2025-07-24
Digital Power Meter	EVERFINE	PF2010A	1011004	2024-07-25	2025-07-24
Digital Oscilloscope	Tektronix	TDS 220	C033131	2024-07-25	2025-07-24
Photometric detector	EVERFINE	V-10141A	1006285	2024-07-25	2025-07-24
thermometer	Anymetre	JR900A	N/A	2024-07-25	2025-07-24
Special zero-voltage synchronous switching AC	EVERFINE	DPS1010-YF	1011001T	2024-07-25	2025-07-24

Uncertainty:

The uncertainty of Start time $U=0.6\%$ ($K=2$), at the 95% confidence level.

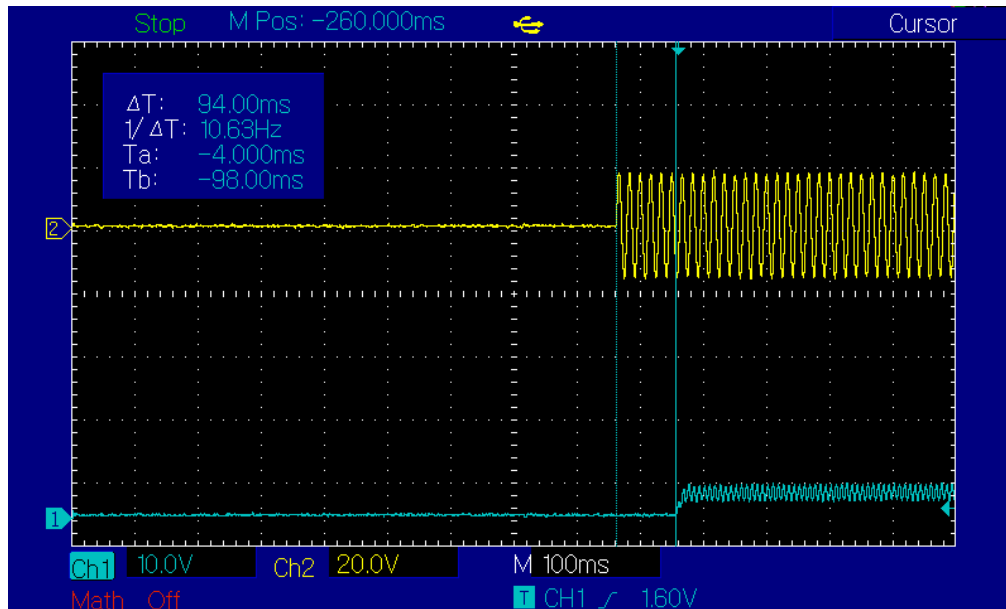
Test Data:

Test date: 2024-12-03; Test voltage AC 120 V 60 Hz.

Sample No.	Time base (ms/div)	Start Time(ms)
2402Z22961E-S01	100.0	94.00

Figure of Input voltage and light output waveforms

2402Z22961E-S01



3.5. Transient Protection

Test Method and ENERGY STAR Requirements:

*ANSI/IEEE C62.41.1-2002: IEEE Guide on the Surge Environment in Low-Voltage (1000 V and Less) AC Power Circuits (This method is not in NVLAP accreditation scope)

ANSI/IEEE C62.41.2-2002: IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000V and Less) AC Power Circuits

ENERGY STAR Requirement:

Ballast or driver shall comply with ANSI/IEEE C62.41.1-2002 and ANSI/IEEE C62.41.2-2002, Category A operation. The line transient shall consist of seven strikes of a 100 kHz ring wave, 2.5 kV level, for both common mode and differential mode.

Test Procedure:

Seven strikes were performed on lamp base in accordance with ANSI/IEEE C62.41 (Category A). The line transient shall consist of seven strikes of a 100 kHz ring wave, 2.5 kV level, for both common mode and differential mode. Samples should be fully operational after seven strikes.

Test Equipment:

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
AC Power source	HengPu	HPA 1103	0003394	2024-07-25	2025-07-24
MODULAR IMPULSE GENERATOR	EMC-PARTNER	MIG0603IN1 IEC-ANSI	593	2024-07-25	2025-07-24

Uncertainty:

The uncertainty of voltage $U=3.00\%$ ($K=2$), at the 95% confidence level.

The uncertainty of time $U=3.00\%$ ($K=2$), at the 95% confidence level.

Test Data:

Sample No.	Transient Protection Test
2402Z22961E-S01	PASS

3.6. Operating Frequency

Test Method and ENERGY STAR Requirements:

*ANSI C82.18-2022: Light Emitting Diode Drivers—Performance Characteristics (This method is not in NVLAP accreditation scope)

ENERGY STAR Requirements:

$\geq 120\text{Hz}$

Test Procedure:

The sample was operated at rated voltage in its designated orientation during the test. Lamp was measured by a photodetector, integrating sphere and rapid recording photometer. For dimmable lamps, test was performed with dimmer at three levels: full light output level, medium light output level and minimum light output level. The final result would be the minimum of the three test results.

Test Equipment:

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
1.5m integrating sphere	SENSING	1.5m	N/A	2024-07-25	2025-07-24
Digital power meter	EVERFINE	PF9811	G135717CN1361159	2024-07-25	2025-07-24
Precision frequency power supply	ALL Power	APW-105N	970663	2024-07-25	2025-07-24
Standard Light Source	EVERFINE	D204	N/A	2024-07-25	2025-07-24
thermometer	SENSING	N/A	N/A	2024-07-25	2025-07-24
Programmable Precision DC Power Supply	EVERFINE	WY5015	11060010	2024-07-25	2025-07-24
light flickering analyzer	EVERFINE	LFA-3000	P185972CJ6371119	2024-07-25	2025-07-24

Uncertainty:

The uncertainty of Operating Frequency $U=0.6\%$ ($K=2$), at the 95% confidence level.

Test Data:

Sample No.	Operating Frequency (Hz)
2402Z22961E-S01	120.000

3.7. Flicker Test

Test Method:

NEMA 77-2017: Temporal Light Artifacts: Test Methods and Guidance for Acceptance Criteria

Performance Requirements:

Optional: $P_{st} \leq 1.0$; SVM for indoor luminaires: ≤ 1.6 .

Test Procedure:

All test luminaires required stabilized after operating for this period of time per IES-LM-79-08 before measurements and the stabilization time recorded. The light output was measured by integrating sphere and light flicker analyzer (sampling speed is set no less than 20 kHz). The Sampling time was set 3 minutes. Flicker was calculated by flicker analyzer according to NEMA 77-2017. Wave data was reported as CSV file separately.

Test Equipment:

Device	Manufacturer	Model No	Serial No	Calibration date	Calibration due date
1.5m integrating sphere	SENSING	1.5m	N/A	2024-07-25	2025-07-24
Digital power meter	EVERFINE	PF9811	G135717CN1361159	2024-07-25	2025-07-24
Precision frequency power supply	ALL Power	APW-105N	970663	2024-07-25	2025-07-24
Standard Light Source	EVERFINE	D204	N/A	2024-07-25	2025-07-24
thermometer	SENSING	N/A	N/A	2024-07-25	2025-07-24
Programmable Precision DC Power Supply	EVERFINE	WY5015	11060010	2024-07-25	2025-07-24
light flickering analyzer	EVERFINE	LFA-3000	P185972CJ6371119	2024-07-25	2025-07-24

Uncertainty:

The uncertainty of power meter AC current $U=0.19\%$ of rdg, AC Voltage $U=0.17\%$ of rdg, Power $U=0.48\%$ ($K=2$), at the 95% confidence level.

Test Data:

Sample No.	P_{st}	SVM
2402Z22961E-S01	0.160	0.310

Note: Detail light source flicker test data please refer to attachment B.

3.8. Dimming and noise Test

Test Method and ENERGY STAR Requirements:

IES LM-79-08: Approved Method: Electrical & Photometric Measurement of Solid-state Lighting Products

*NEMA SSL 7A-2015 (R2021): Phase Cut Dimming for Solid State Lighting: Basic Compatibility(This method is not in NVLAP accreditation scope)

ENERGY STAR Requirements:

The luminaire and its components shall provide continuous dimming from 100% to 20% of light output. Luminaire shall not emit noise above 24dBA at 1 meter or less at the minimum output.

Test Procedure:

The photometric measurement test was performed with dimmer specified by manufacturer and detailed as below. For continuous dimmer, the dimmer was set maximum level and minimum level output for photometric measurement.

Sample was transferred to sound insulation chamber to measure the noise level at the lowest dimmable level.

Test Equipment:

Device	Manufacture	Model No	Serial No	Calibration date	Calibration due date
1.5m integrating sphere	SENSING	1.5m	N/A	2024-07-25	2025-07-24
Digital power meter	EVERFINE	PF9811	G135717CN1361159	2024-07-25	2025-07-24
Precision frequency power supply	ALL Power	APW-105N	970663	2024-07-25	2025-07-24
Standard Light Source	EVERFINE	D204	N/A	2024-07-25	2025-07-24
thermometer	SENSING	N/A	N/A	2024-07-25	2025-07-24
Programmable Precision DC Power Supply	EVERFINE	WY5015	11060010	2024-07-25	2025-07-24
light flickering analyzer	EVERFINE	LFA-3000	P185972CJ6371119	2024-07-25	2025-07-24
Precision frequency power supply	ALL Power	APW-105N	970663	2024-07-25	2025-07-24
Sound Insulation Box	N/A	N/A	01#	2024-07-25	2025-07-24
Sound Level Meter	Hangzhou Aihua	AWA5661	88071	2024-07-25	2025-07-24

Uncertainty:

The uncertainty of power meter AC current $U=0.19\%$ of rdg, AC Voltage $U=0.17\%$ of rdg, Power $U=0.48\%$ ($K=2$), at the 95% confidence level.

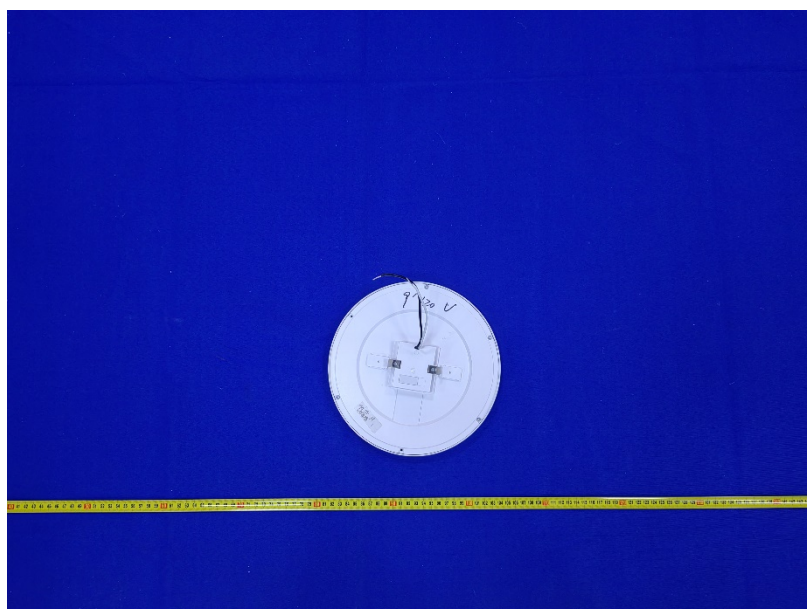
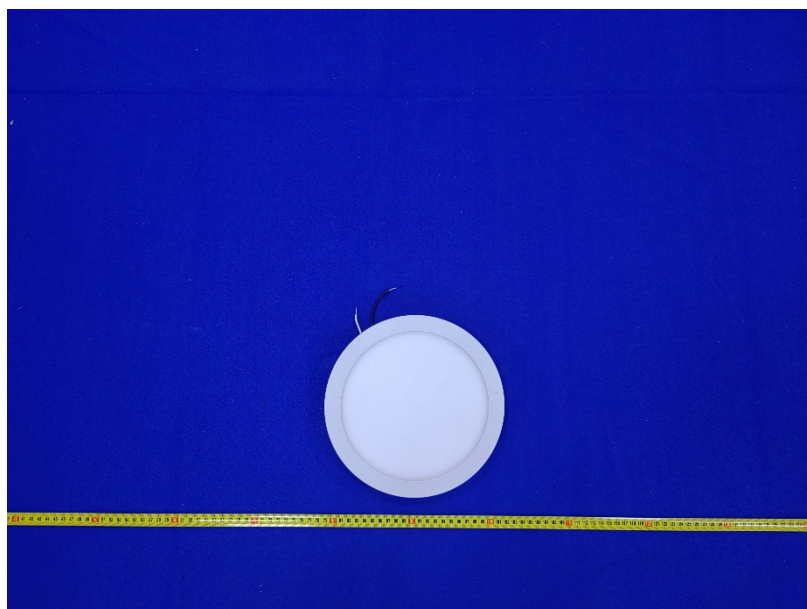
The uncertainty of noise $U=0.5\text{ dB}$ ($K=2$), at the 95% confidence level.

Test Data:

Sample No.		Maximum Level	Minimum Level
2402Z22961E-S01	Light output (Lumen)	1218	117.368
	Percentage	100%	9.64%
	Noise(dBA)	/	19.6

4. EUT Photo

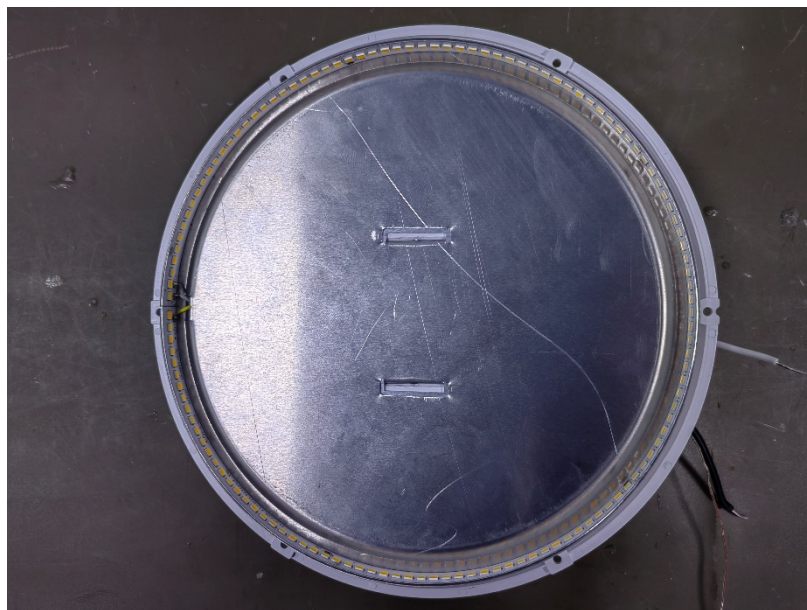
4.1. EUT Photo



4.2. Labeling

GREEN CREATIVE LTD.,
SLMFT9/9CCTS/DIM120V ,
120V 50/60Hz ,
15W ,
2700K, 3000K, 3500K, 4000K, 5000K ,
1250lm(2700K),1250lm(3000K),1300lm(3500K),1300lm (4000K),1300lm (5000K).

4.3. LED Source Photo



4.4. LED Driver Photo



4.5. Dimmer Photo



Attachment A –LM-80 test report and TM-21 Calculator

Attachment B –Light Source Flicker Test Data

Attachment C - Instructions for Color Tunable

Directions

1. The information marked “superscript #” is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.
2. This report includes some test methods are not in NVLAP accreditation scope marked *.
3. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
4. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
5. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor $K=2$ with the 95% confidence interval.
6. This report cannot be reproduced except in full, without prior written approval of the Company.
7. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

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