Test Report

Test Requested By:	Signify (China) Investment Co., Ltd. Shengquan.Wang Building 9, Lane 888, Tianlin Road, Shanghai		
Tested Product Name:	LED Luminaire	**Date of Received:**	2024-01-26
Type Designation:	DN065B G4 12S/830_840_865 PSU-E D150 RD Model:9290040835	**Serial No:**	SL47287
		Quantity:	1
		Status:	Intact
Test Specification:	IES LM-79-2019 (section 7, 8) and Test Request numbered 20240126015.A1		
Test Place:	Signify (China) Investment Co., Ltd. LTC (Lighting Testing Center) No. 2 Building, No. 9, Lane 888, Tian Lin Road, Shanghai, P.R. China, 200233		
Test Result:	The test report only provides test data.		

Tested By:	Xiaojing Yang 杨晓菁	**Reviewed By:**	Weiqiang Shi 施伟强	**Approved By:**	Jian Wang
Position:	Technician	**Position:**	Engineer	**Position:**	Engineer
Date:	2024-02-02	**Date:**	2024-02-02	**Date:**	2024-02-02

Others:
This test is to verify the product Power, Luminous Flux, color performance and Luminous Intensity Distribution according to IES LM-79-2019 (section 7, 8).
The test sample QTY is according to test requestor's requirements.

Summary of Test Result			
Test Item	**SL47287-01-3000K**	**SL47287-01-4000K**	**SL47287-01-6500K**
Power (W)	11.1	11.0	11.1
Power Factor	0.94	0.94	0.93
Luminous Efficacy (lm/W)	112.5	120.4	114.4
Total Luminous Flux (lm)	1253.1	1319.7	1271.1
CCT(K)	3076	4221	6887
Ra	83	86	83
Rf	85	84	82
Rg	95	96	94
Center Luminous intensity(cd)	449.5	473.8	456.2
Average Beam Angle(degree)	109.1	109.1	109.1

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TEST SUMMARIES

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Test Result:

Test Data

5.1.3 TEST RESULT OF LUMINOUS INTENSITY DISTRIBUTION PERFORMANCE (NUMBER 2 IN TEST PLAN)

Test Result:

Test Data

1. Purpose

The test is for verify the product performance base on section 7.0, section 8.0 of IES LM-79-2019 related standard requirement.

2. Test Equipment

Signify (China) Investment Co., Ltd.
LTC (Lighting Testing Center)
No. 2 Building, No. 9, Lane 888, Tian Lin Road, Shanghai, P.R. China, 200233

Equipment	Type	Manufacturer	S/N	Calibrated until
Standard Lamp	D204, 24V/100W	EVERFINE	G100283CD1351242	2024-10-25
AC Power Source	6812B	Agilent	MY41002222	2025-01-18
Data Acquisition Unit	34970A	Agilent	MY44065951	2024-07-13
spectrometer	CAS140-CT	IS	500414213	2024-04-02
Integrating sphere	2M	LabSphere	1030104795	2024-04-02
Digital Power Meter	WT1600	YOKOGAWA	91L213204	2024-12-10
AC Power Source	6812B	Agilent	MY41001322	2024-12-10
Digital Power Meter	WT1800	YOKOGAWA	91M508508	2024-12-10
Goniometer Test System	GO1600	LMT	12A7392	2024-05-18

3. General Product Information

3.1. Product Information

Type Designation	Model Number
DN065B G4 12S/830_840_865 PSU-E D150 RD	9290040835
DN065B G4 12S/830_840_865 PSU-E D150 PG	9290041288

3.2. Rated Electrical Parameter

Type Designation	Input Voltage
DN065B G4 12S/830_840_865 PSU-E D150 RD 9290040835	230V/ACV-50Hz
DN065B G4 12S/830_840_865 PSU-E D150 PG 9290041288	230V/ACV-50Hz

4. Test Set-up and Operation Modes

4.1. Colorimetric Measurements – Integrating Sphere

The integrating sphere is a 78-inch diameter sphere which exhibits a “4π geometry” configuration according to IES LM-79-2019 and is applicable for all types of LED products (directional and non-directional light projections). Its spectroradiometer is a CCD detector.

The integrating sphere uses self-absorption correction to eliminate errors due to mismatches between the standard reference lamp and the test samples being measured. The auxiliary lamp used to perform this task is a halogen type lamp powered by DC power supply. Ambient temperature (for photometric analysis) is measured using a thermocouple located inside the integrating sphere at the same height as the sample under test and not more than 1 meter in horizontal distance away from the sample. The thermocouple is located behind the baffle of the photo detector in order to eliminate any direct optical radiation from the sample under test.

The calibration of the sphere photometer-spectroradiometer system is traceable to NIM.

4.2. Stabilization Method

The sample is placed inside the integrating sphere (or on the goniometer fixture) in base up position and powered by a regulated and conditioned 230 Volt with a tolerance interval of ±0.5%, 50 Hertz alternating current supply. The sample is tested at ambient temperature 25°C with a tolerance interval of ±1.2°C. The luminous flux, correlated color temperature, color rendering index, chromaticity coordinates, electrical power measurements data contained in this report are the readings upon which stabilization is verified. The stabilization time shown on the results pages of this report denote the time of measurement since this is the minimum time that the sample is assumed to have taken to reach stabilization according to section 6.0 of IES LM-79-2019.

4.3. Luminous Flux and Luminous Intensity Distribution Measurements – Goniometer

The luminous flux test is conducted in C-type goniometer (with mirror). The goniometer is manufactured by LMT and the detector is photometer head. The distance between the detector and sample’s optical center is 19.31 meters. The ambient temperature in goniometer room is controlled within 25°C with a tolerance interval of ±1.2°C and humidity maintained between 10% and 65%. The lamp was allowed to stabilize before measurements were made.

5. Test Result

5.1. Test Result for Electrical and Optical Performance

Test according to test plan attached numbered 20240126015.A1.

5.1.1 Test Result of Luminous Flux (Number 2 in Test Plan)

Test Result: **Test Data**

Table 1 Light Output and Lumen Efficiency Test on DN065B G4 12S/830_840_865 PSU-E D150 RD, Model: 9290040835
Test Date: 2024-02-01
Stabilization time: 35min

Lamp NO.	U	I	P	PF	Flux	Efficiency	Environment Temp.
	(V)	(mA)	(W)		(lm)	(lm/W)	(℃)
Lower Limit							
Upper Limit							
SL47287-01-3000K	229.88	51.518	11.141	0.94	1253.1	112.5	24.5
SL47287-01-4000K	229.92	50.77	10.965	0.94	1319.7	120.4	24.5
SL47287-01-6500K	229.99	52.149	11.112	0.93	1271.1	114.4	24.5

5.1.2 Test Result of Colorimetric Performance (Number 1 in Test Plan)

Test Result: **Test Data**

Table 2 Color Test on DN065B G4 12S/830_840_865 PSU-E D150 RD, Model: 9290040835
Test Date: 2024-01-30
Stabilization time: 35min

Lamp NO.	U	I	Color Point				Duv	Sphere Temp.
	(V)	(mA)	x	y	u'	v'		(℃)
Lower Limit								
Upper Limit								
SL47287-01-3000K	229.95	51.2	0.4316	0.4022	0.2479	0.5198	0.0000	25.0
SL47287-01-4000K	229.95	50.4	0.3696	0.3637	0.2231	0.4941	-0.0029	25.0
SL47287-01-6500K	229.96	51	0.3067	0.3242	0.1954	0.4649	0.0038	24.9

Lamp NO.	CCT	Ra	R1	R2	R3	R4	R5	R6
SL47287-01-3000K	3076.4	82.8	81.4	91.3	96.2	80.7	81.5	89.4
SL47287-01-4000K	4220.8	86.1	85.9	93.2	95.7	84.2	85.3	88.5
SL47287-01-6500K	6886.6	83.4	81.8	88.6	91.2	82.1	81.7	82.3

Lamp NO.	R7	R8	R9	R10	R11	R12	R13	R14
SL47287-01-3000K	82.7	59.1	6.7	80.1	80.3	69.2	83.9	98.7
SL47287-01-4000K	86.5	69.3	23.1	82.5	83.8	62.1	88.4	98.3
SL47287-01-6500K	88.7	70.9	9.9	71.4	81.3	53.6	84.2	95.5

Lamp NO.	Rf	Rg	$R_{cs,h1}$	$R_{cs,h2}$	$R_{cs,h3}$	$R_{cs,h4}$	$R_{cs,h5}$	$R_{cs,h6}$
SL47287-01-3000K	85	95	-11%	-8%	-3%	0%	-1%	1%
SL47287-01-4000K	84	96	-11%	-6%	-3%	-1%	-2%	0%
SL47287-01-6500K	82	94	-13%	-8%	-5%	-1%	-3%	-1%

Lamp NO.	$R_{cs,h7}$	$R_{cs,h8}$	$R_{cs,h9}$	$R_{cs,h10}$	$R_{cs,h11}$	$R_{cs,h12}$	$R_{cs,h13}$	$R_{cs,h14}$
SL47287-01-3000K	-5%	-4%	-6%	-4%	1%	8%	4%	5%
SL47287-01-4000K	-5%	-6%	-6%	-5%	4%	6%	8%	2%
SL47287-01-6500K	-5%	-9%	-11%	-4%	3%	5%	8%	14%

Lamp NO.	$R_{cs,h15}$	$R_{cs,h16}$	$R_{hs,h1}$	$R_{hs,h2}$	$R_{hs,h3}$	$R_{hs,h4}$	$R_{hs,h5}$	$R_{hs,h6}$
SL47287-01-3000K	-3%	-8%	0.00	0.07	0.10	0.06	0.03	-0.02
SL47287-01-4000K	-1%	-5%	0.01	0.06	0.10	0.05	0.03	-0.01
SL47287-01-6500K	1%	-7%	0.00	0.07	0.09	0.07	0.02	-0.02

Lamp NO.	$R_{hs,h7}$	$R_{hs,h8}$	$R_{hs,h9}$	$R_{hs,h10}$	$R_{hs,h11}$	$R_{hs,h12}$	$R_{hs,h13}$	$R_{hs,h14}$
SL47287-01-3000K	-0.05	0.00	0.06	0.11	0.13	0.02	-0.07	-0.16
SL47287-01-4000K	-0.01	0.02	0.09	0.14	0.15	0.05	-0.08	-0.06
SL47287-01-6500K	-0.01	0.02	0.13	0.19	0.16	0.05	-0.05	-0.13

Lamp NO.	$R_{hs,h15}$	$R_{hs,h16}$						
SL47287-01-3000K	-0.13	-0.16						
SL47287-01-4000K	-0.15	-0.11						
SL47287-01-6500K	-0.22	-0.06						

5.1.3 Test Result of Luminous Intensity Distribution Performance (Number 2 in Test Plan)

Test Result: **Test Data**

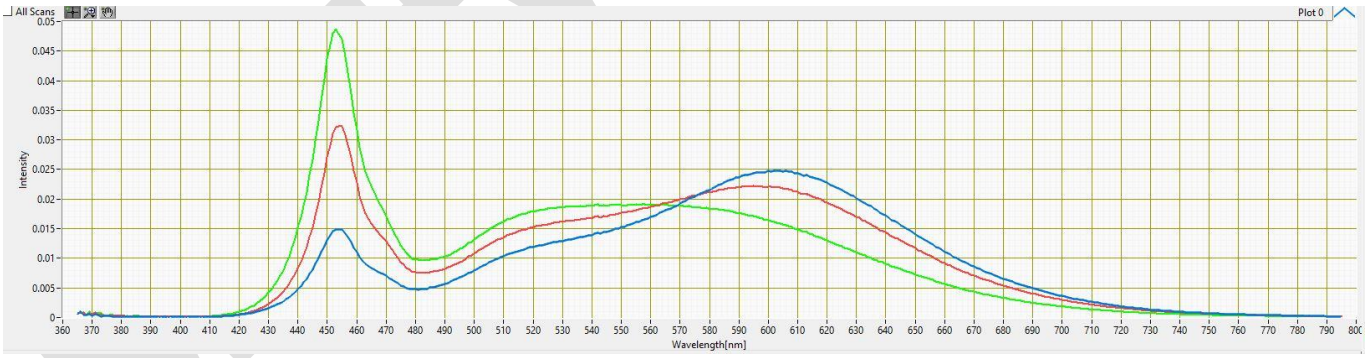
Table 3 Luminous Intensity Distribution Test on DN065B G4 12S/830_840_865 PSU-E D150 RD, Model: 9290040835
Test Date: 2024-02-01
Stabilization time: 35min
Operation time: 45min

Lamp NO.	U	I	Beam Angle (°)			Central Luminous Intensity (cd)	Environment Temperature
	(V)	(mA)	Plane 0/180°	Plane 90/270°	Average		（℃）
Lower Limit							
Upper Limit							
SL47287-01-3000K	229.88	51.52	109.0	109.2	109.1	449.54	24.5
SL47287-01-4000K	229.92	50.77	108.9	109.2	109.1	473.76	24.5
SL47287-01-6500K	229.99	52.15	109.0	109.2	109.1	456.17	24.5

6. Test Photo

Photograph 1, Test Sample

Photograph 2, Spectral Flux



7. List of Tables

8. List of Photographs

The test results presented in this report relate only to the item tested.
The test results presented in this report relate only to the samples tested.
The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

No.	Group	Test Item	According to	Type Designation	Tested By	QTY	Test Specification	Acceptable Value/Range
1	A	Photometric & Colorimetric Test	LV237-108-012-B-G007/IES LM-79-19	DN065B G4 12S/830_840_865 PSU-E D150 RD 9290040835	LTC	3	Equipment:2m Sphere Position:BaseUp Preaheating :IES LM-79-19 section 6 DrivingMode:ACV-50Hz Test Current/Voltage:230V	NA
2	A	Luminous Intensity Distribution Test	LV237-108-012-B-G007/IES LM-79-19	DN065B G4 12S/830_840_865 PSU-E D150 RD 9290040835	LTC	3	Equipment:Gonio_GM05 Position:BaseUp Preaheating :IES LM-79-19 section 6 DrivingMode:ACV-50Hz Test Current/Voltage:230V	NA

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