

PHOTOMETRIC EVALUATION TO IES LM-79-19 SPHERE TEST RESULTS

Sample Tested

JR2-50-GWC--**-AC**

Prepared for:

Nemalux Inc.1018 72 Ave NE
Calgary, Alberta, Canada T2E 8V9**Technical Report Number**

80213137-6

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Program Description

Photometric and electrical testing of a JR2-50-GWC-**-**-AC LED Luminaire to IES LM-79-19.

Executive Summary

Sample Tested = JR2-50-GWC-**-**-AC

Sample Number = 44003157

Driver = SOSEN SS-25VA-L50BHL

LED Module = Samsung 301B

Luminous Efficacy (Lumens/Watt)	Luminous Flux (Lumens)	Input Power (Watts)	Power Factor	ATHD (%)
162.46	2873.88	17.69	0.9906	12.32

CCT(K)	CRI	R9	Rcs,h1	Rf / Rg
5244	74.7	-19	-17	75 / 93

* The above results are recorded / derived from measurements made using an Integrating Sphere

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Test Sample Pictures

The following sample was submitted for evaluation:



Nimalux Inc. : JR2-50-GWC--**-AC**

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The following results were measured after stabilization of the sample in the Integrating Sphere (unless otherwise stated). Stability shall be achieved when the variation (Maximum to minimum) of at least three readings of the light output and electrical power consumption, taken at a maximum of 10 minute intervals over a period of 20 minutes and divided by the last of these measurements chronologically, is less than 0.5%.

Key Photometric Results	Sample Reference
	JR2-50-GWC-**-**-AC
Luminous Efficacy (Lumens/Watt)	162.46
Total Luminous Flux (Lumens)	2873.88
Total Radiant Flux (Watts)	8.61
Correlated Color Temperature (CCT)	5244
Color Rendering Index (CRI)(Ra)	74.7
R9 Value	-19
IES Rf / IES Rg	75 / 93
Local Chroma Shift Rcs,h1	-17
Chromaticity (Chroma x/Chroma y)	0.3389 / 0.3526
Chromaticity (Chroma u/Chroma v)	0.2069 / 0.3228
Chromaticity (Chroma u'/Chroma v')	0.2069 / 0.4842
Duv Value	0.0030
Stabilization Time (Light and Power)	40 minutes
Total Run Time (Integrating Sphere)	45 minutes
Scotopic/Photopic ratio $\Phi(v')/\Phi(v)$	1.86

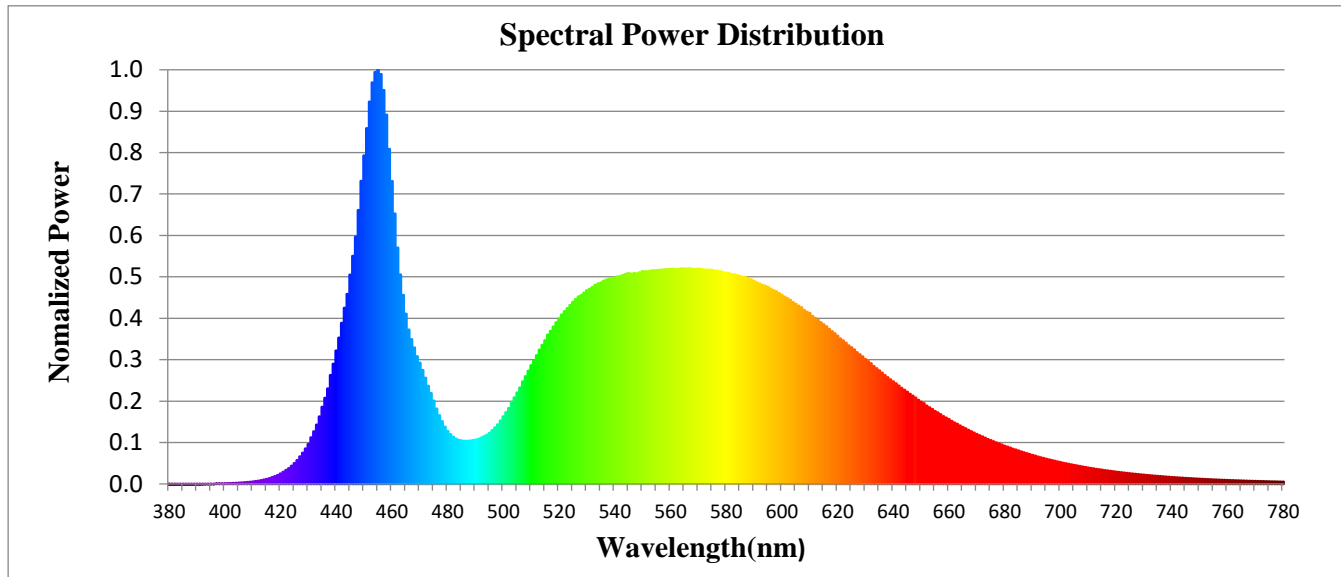
Electrical Input Results:	Sample Reference
	JR2-50-GWC-**-**-AC
Input Power (Watts)	17.69
Input Voltage (Volts AC)	120.08
Input Current (Amps)	0.1487
Input Frequency (Hertz)	60.0
Power Factor	0.9906
Total Harmonic Distortion (THD A)%	6.25%

Additional Information	Sample Reference
	JR2-50-GWC-**-**-AC
Ambient Temperature	25°C
Integrating Sphere Detector	CDS 2600 Spectroradiometer
Absortion Correction Used?	Yes
Date Tested	6/14/2024

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Spectral Flux

The following graph shows the spectral response curve of the radiant flux for the sample:



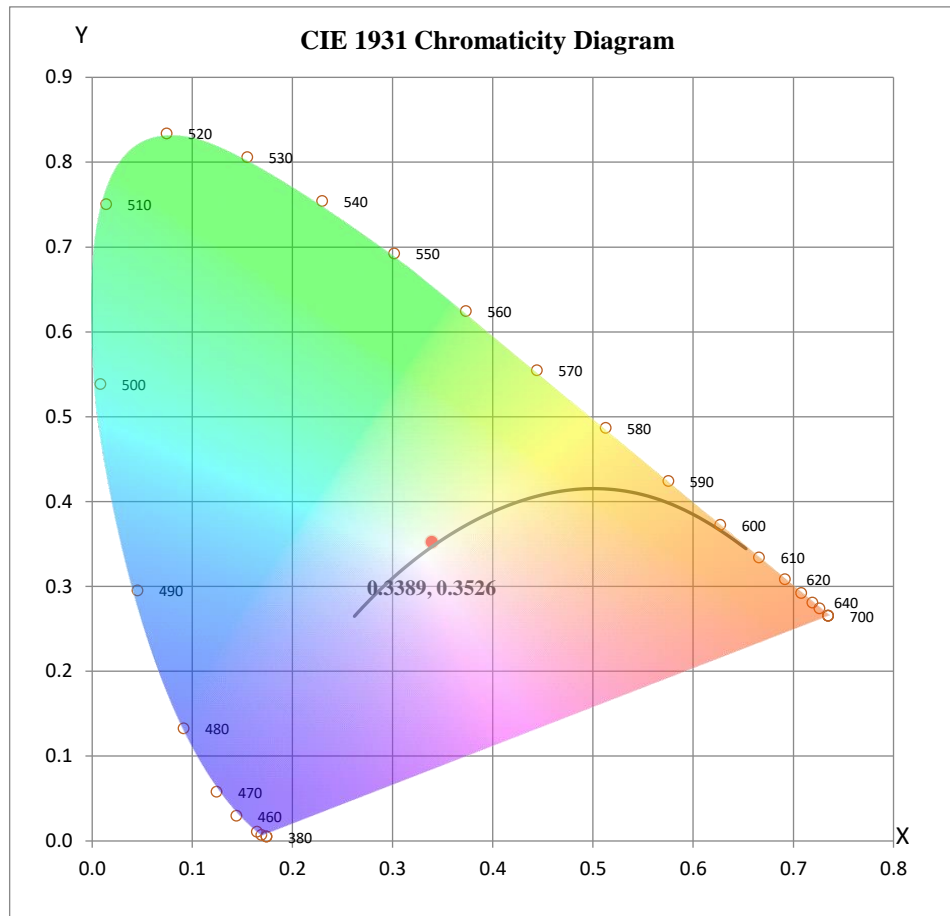
Spectral response of the Radiant Flux

(380nm to 780nm - calibrated range of the Spectroradiometer)

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Chromaticity Diagram

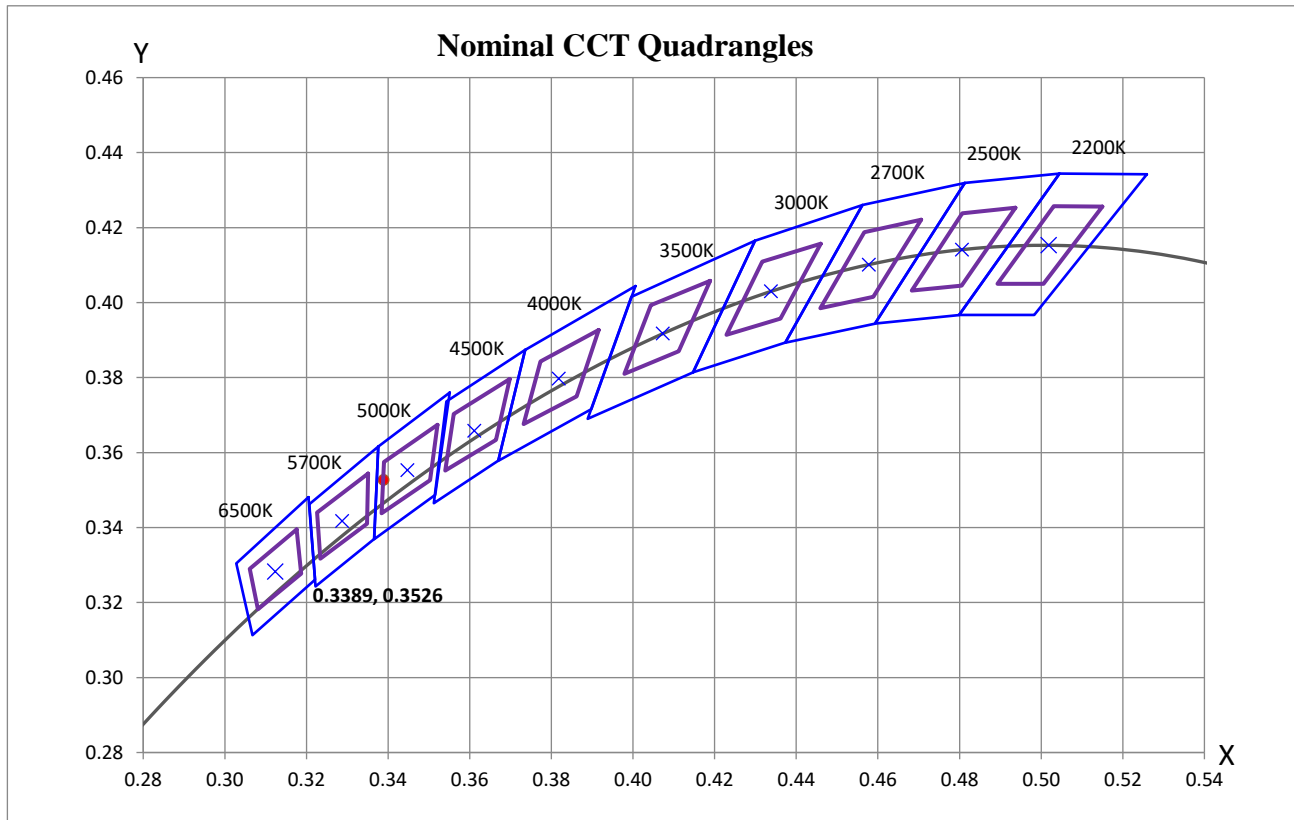
The following image shows the chromaticity diagram for the sample:



$$x = 0.3389 \quad y = 0.3526$$

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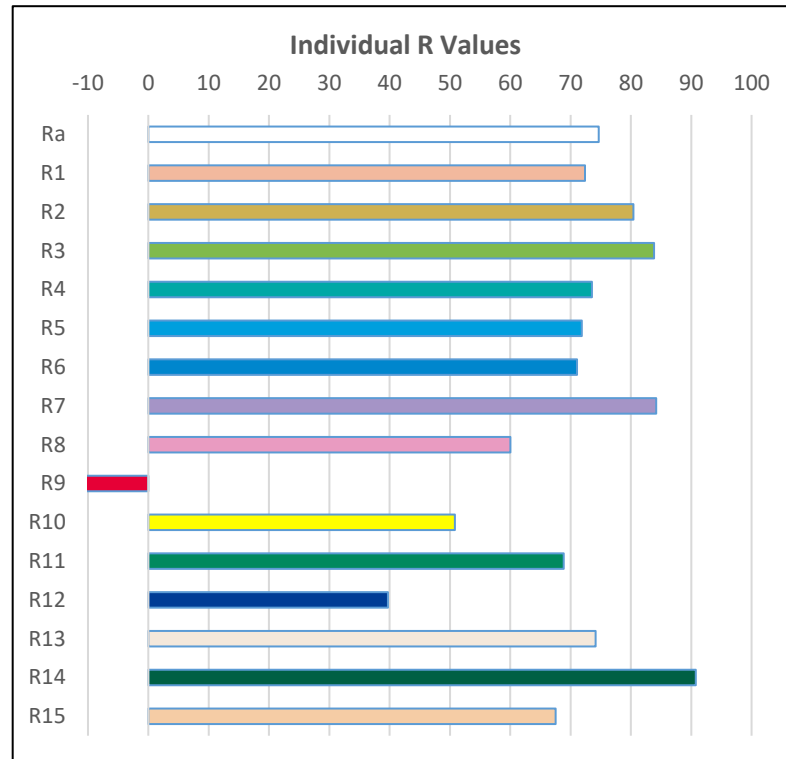
Nominal CCT Quadrangles



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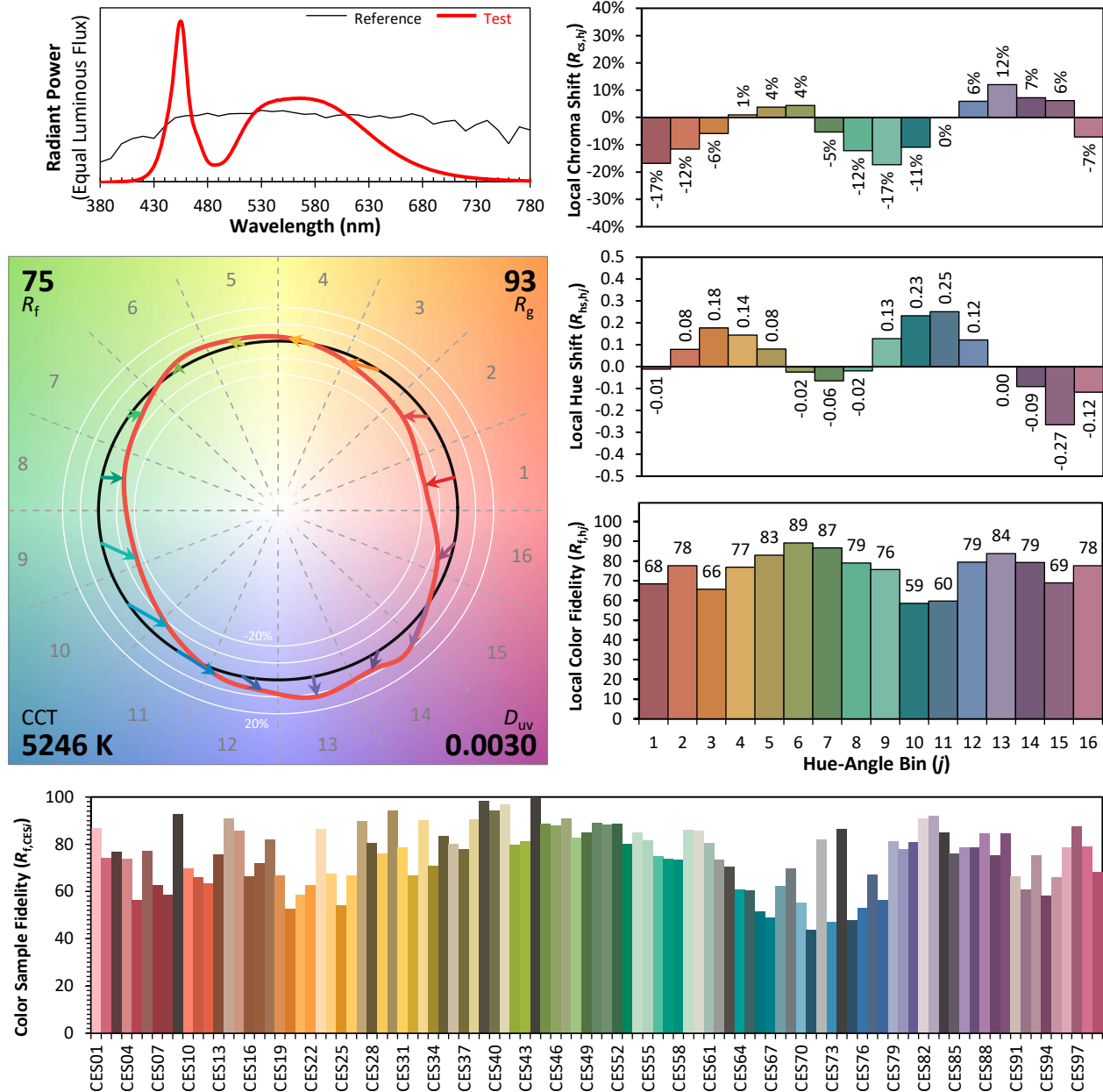
Color Rendering Index

Ra	74.7
R1	72
R2	80
R3	84
R4	74
R5	72
R6	71
R7	84
R8	60
R9	-19
R10	51
R11	69
R12	40
R13	74
R14	91
R15	68



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ANSI/IES TM-30-18 Color Rendition Report



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

x 0.3388
 y 0.3525
 u' 0.2069
 v' 0.4842

CIE 13.3-1995
(CRI)
 R_a 75
 R_g -19

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

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Photometric Testing Information

The sample was evaluated for photometric and electrical characteristics using an integrating sphere and a goniophotometer, each located in purpose-built, temperature and humidity-controlled, draft free environments

The integrating sphere is by Labsphere which exhibits a “4 π geometry” configuration according to IES LM-79-19 and is applicable for all types of LED products (directional and non-directional light projections). Its spectroradiometer is an array-type detector manufactured and calibrated by Labsphere.

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 a calibrated Lamp Power Supply manufactured and calibrated by Labsphere. Ambient temperature (for photometric analysis) is measured using a “J-Type” 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.

Luminaire Stabilization.

The sample was placed inside the integrating sphere and powered by a regulated and conditioned Voltage alternating current supply. The correlated color temperature, color rendering index, chromaticity coordinates and electrical power measurements contained in this report are the numeric averages of the three readings upon which stabilization is verified. The stabilization times shown on the results pages of this report denote the time of the 1st measurement (of the 3 consecutive readings) since this is the minimum time that the sample is assumed to have taken to reach stabilization.

The integrating sphere is calibrated using a quartzline halogen lamp with the following specifications:
 (Calibrated by Labsphere – NIST traceable).

Lamp ID	J178		
Manufacture	Donar		
Model Number	SCL-1400-J178		
Part ID	SCL-1400		
Current (A)	2.679		
Wattage (W)	75.0		
Voltage (VDC)	28.0		
Luminous Flux	1306		
Calibration Date	6/21/2021		

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Equipment List: Sphere B Equipment

Description	Manufacturer and Model Number	CSA Instrument Reference Number	Calibration Due Date
Integrating Sphere 118"	Labsphere LMS-3M	Z00029788	N/A
Spectroradiometer	Labsphere CDS2600	N/A	N/A
Auxiliary Lamp PSU	Labsphere LPS525	N/A	N/A
Power Analyzer	Yokogawa WT310E	Z00025875	10/18/2024
Programmable AC Power Supply	Chroma Instruments 61605	Z00023974	N/A

* All equipment is calibrated to ISO / IEC 17025-2017 guidelines.

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