

LM-79-08 Test Report

For

ELEC-TECH INTERNATIONAL CO LTD

No.1 Jinfeng Road, Tangjiawan Town, Xiangzhou District, Zhuhai
City, Guangdong Province, P.R. China 519085

LED STRIP LIGHT

Model Name(s):

545991##

Representative (Tested) Model:

54599141

Model Difference: ##=41-50 identifies 4000K.

Prepare by:

Derek Lai

Engineer: Derek Lai

Date: 2018-11-15

Review by:

Vincent Yuan

Technical Lead: Vincent Yuan

Issue Date: 2018-11-16

Revised Date: N/A

- Note:
1. The results contained in this report pertain only to the tested samples.
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 3. This report does not imply product certification, approval, or endorsement by NVLAP, or any agency of the Federal Government.

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Product Information:

Client Name:	ELEC-TECH INTERNATIONAL CO LTD
Brand Name:	Commercial Electric, ETI
Model Number:	545991##(##=41-50)
Product Type:	Indoor, Inseparable SSL Luminaire
Rating Input:	120Vac, 60Hz, 90W
Declared CCT:	4000K
Declared Light Output:	9000lm
LED Manufacturer:	Samsung
LED Model:	SPMWHX228MD5XXW0XX
LED Quantity:	528 pcs

Test Information:

Standard Lamp:	Total Spectral Radiant Flux Standard Lamp, trace to NIST. 1. D908S for Gonio 2. D215S for Integrating Sphere
Date of Receipt Samples:	2018-11-14
Quantity of Receipt Samples:	4 pcs
Sample Number:	S181114002-S1~S4

Laboratory Information:

Test Laboratory:	Dongguan New Testing Centre Co., Ltd
Laboratory Address:	3F, No. 1 the 1 st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China
Laboratory Contact Name:	Neil Zhong
Laboratory Contact E-mail:	Neil_ntc@163.com

Report Information:

Issued Date of Test Report:	2018-11-16
Revised Date of Test Report:	N/A
Test Report No.:	NTCR18110111
Remark (If applicable):	N/A

Test Specification:	
Date of Test	2018-11-14
Test Item	1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate
Reference Standard	IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products ANSI C78.377-2017 Specifications for the Chromaticity of Solid State Lighting Products CIE 13.3-1995 Method of Measuring and Specifying Color Rendering Properties of Light Sources CIE 15-2004 Technical Report Colorimetry

Test Methods:
<p>1. Photometric and Electrical Measurements – Light Distribution Method:</p> <p>Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$, 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 required Voltage and Frequency. It was stabilized before measurement was made. Luminous Flux, Luminaire Efficacy and Zonal Lumen were calculated from the software taken at 1° vertical intervals and 15° horizontal intervals.</p>
<p>2. Photometric and Electrical Measurements – Integrating Sphere Method:</p> <p>Photometric parameters were measured using an integrating sphere, as spectroradiometer and software. The ambient temperature condition inside the sphere was measured at $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. 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 require Voltage and Frequency. It was stabilized before measurement was made. Chromaticity Coordinates, Correlated Color Temperature and Color Rendering Index were calculated from the spectral radiant flux measurements taken at least 1 nm intervals over the rage of 380 to 780 nm.</p>

Integrating Sphere Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
24.2	40.8	Face Down	90	10

Electrical Data:

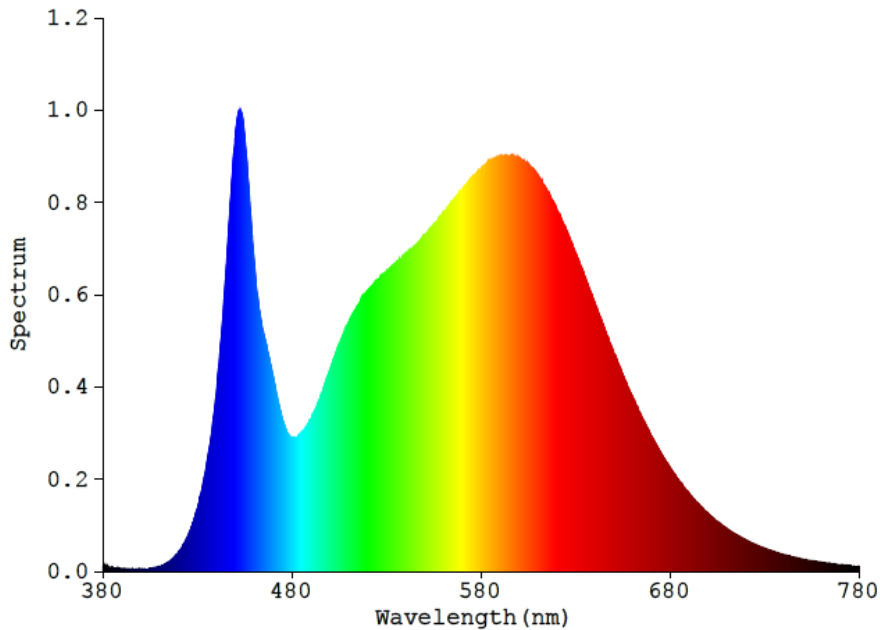
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.7595	89.98	0.9872

Color Data:

Parameter	Result
CCT(K)	4035
Color Rendering Index (CRI)	83.9
R9	13
Chromaticity, x	0.3794
Chromaticity, y	0.3775
Chromaticity, u'	0.2241
Chromaticity, v'	0.5018
Duv	0.00068

Special Color Rendering			
R1	82	R9	13
R2	90	R10	76
R3	95	R11	81
R4	82	R12	63
R5	82	R13	84
R6	86	R14	98
R7	87	R15	76
R8	66	-	-

Spectrum Diagram:



Goniophotometer Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
24.2	40.8	Face Down	90	25

Electrical Data:

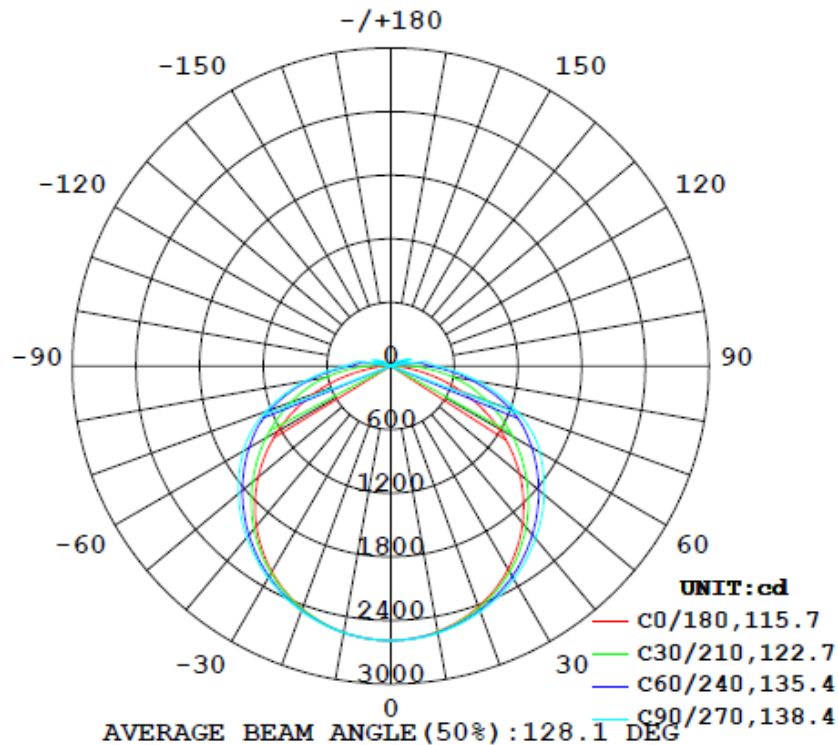
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.7595	89.98	0.9872

Goniophotometer Data:

Parameter	Results
Total Luminous (lm)	9283.1
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	103.17
Zonal Lumens Distribution (0-90°)	96.2%
Beam Angle (°)	128.1

Luminous Intensity Distribution Diagram:

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	llum, lamp
10	2542	2552	2558	2556	2552	2552	2555	2548	0- 10	245.4	245.4	2.64,2.64
20	2417	2442	2467	2452	2426	2445	2460	2426	10- 20	708.2	952.6	10.2,10.2
30	2212	2268	2320	2284	2241	2272	2310	2259	20- 30	1091	2045	22,22
40	1924	2024	2124	2055	1970	2042	2111	2024	30- 40	1352	2398	26.6,26.6
50	1566	1752	1889	1778	1621	1765	1874	1742	40- 50	1467	4864	32.4,32.4
60	1176	1442	1622	1471	1229	1459	1604	1425	50- 60	1427	6291	37.8,37.8
70	718.8	1116	1272	1145	777.4	1122	1250	1104	60- 70	1241	7522	41.1,41.1
80	262.2	705.6	826.6	726.8	215.9	722.2	819.7	688.2	70- 80	909.4	8442	50.9,50.9
90	4.272	290.1	426.5	308.2	12.20	302.5	418.8	285.6	80- 90	486.9	8929	56.2,56.2
100	2.420	26.24	157.9	24.29	2.444	51.27	170.5	10.17	90-100	202.0	9131	58.4,58.4
110	1.969	82.60	190.2	91.66	1.870	82.12	180.2	74.98	100-110	62.07	9194	59.99
120	1.080	29.55	108.4	32.84	1.147	26.04	100.4	21.29	110-120	61.97	9256	59.7,59.7
130	1.844	1.646	26.70	1.748	1.980	2.021	28.65	1.890	120-130	21.45	9277	59.9,59.9
140	1.854	1.475	1.746	1.517	2.072	2.018	2.225	1.956	130-140	2.775	9280	100,100
150	1.750	1.561	1.455	1.649	2.228	2.252	2.204	2.240	140-150	1.181	9281	100,100
160	1.826	1.576	1.601	1.604	2.405	2.416	2.426	2.262	150-160	0.9134	9282	100,100
170	1.982	1.857	1.529	1.790	2.275	2.408	2.179	2.279	160-170	0.5744	9282	100,100
180	2.194	2.176	2.129	2.112	2.200	2.187	2.156	2.127	170-180	0.1971	9282	100,100
DEG	LUMINOUS INTENSITY:cd Less than 25% Percent = 17.6 %									UNIT:lm		

Isocandela Diagram:

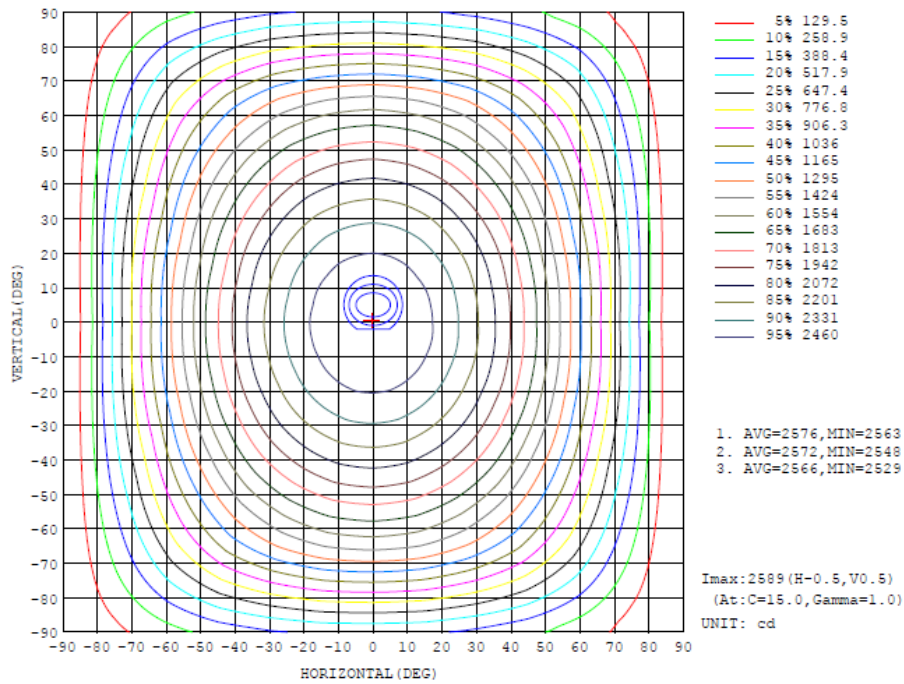
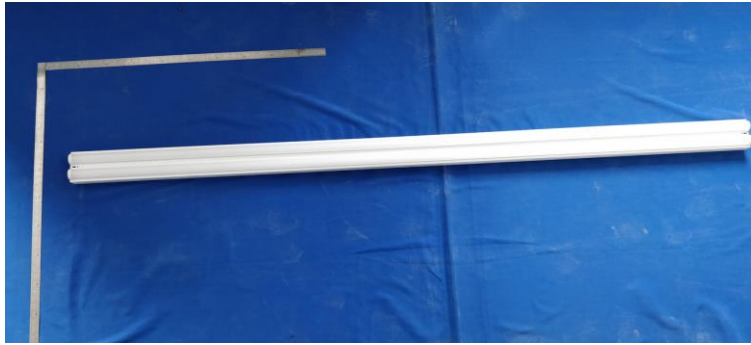


Photo of Sample:



Equipment List:

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2017-11-18	2018-11-17
NTC-F01-006	2.0 meter Integrating Sphere	2017-11-18	2018-11-17
NTC-F01-012	Standard Lamp	2017-11-18	2018-11-17
NTC-F01-013	Standard Lamp	2017-11-18	2018-11-17
NTC-F01-031	Digital Power Meter	2017-11-18	2018-11-17
NTC-F01-019	Temperature & Humidity Meter	2017-11-23	2018-11-22
NTC-F01-023	3.0 meter Integrating Sphere	2018-02-03	2019-02-02