

## 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 Ceiling Lamp

Model Name(s):

536021##

536031##

Representative (Tested) Model:

53603141

**Model Difference: All model has the same construction, except 536021## has Motion Sensor, and 536031## has Switch. ##=41-50 identifies 4000K.**

Prepare by:

*Derek Lai*

Engineer: Derek Lai

Date: 2018-08-15

Review by:

*Vincent Yuan*

Technical Lead: Vincent Yuan

Issue Date: 2018-09-07

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.

**Laboratory: Dongguan New Testing Centre Co., Ltd**

Address: 3F, No. 1 the 1<sup>st</sup> North Industry Road, Songshan Lake Science & Technology Park, Dongguan,  
Guangdong, China

Tel: 86-769-89874553

Website: <http://www.ntc-cert.com>

**Product Information:**

Client Name:	ELEC-TECH INTERNATIONAL CO LTD
Brand Name:	Commercial Electric
Model Number:	536021##, 536031## (##=41-50)
Product Type:	Indoor, Inseparable SSL Luminaire
Rating Input:	120Vac, 60Hz, 16W
Declared CCT:	4000K
Declared Light Output:	1200lm
LED Manufacturer:	Samsung
LED Model:	SPMWHX2286XXXXXXXXXX
LED Quantity:	110 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:	2018-07-31
Quantity of Receipt Samples:	3 pcs
Sample Number:	S18073101-S1~S3

**Laboratory Information:**

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

**Report Information:**

Issued Date of Test Report:	2018-09-07
Revised Date of Test Report:	N/A
Test Report No.:	NTCR18080021
Remark (If applicable):	All model has the same construction, except 536021## has Motion Sensor, and 536031## has Switch. Model 536031## conduct all tests.

<b>Test Specification:</b>	
Date of Test	2018-08-01
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

<b>Test Methods:</b>
<p><b>1. Photometric and Electrical Measurements – Light Distribution Method:</b></p> <p>Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at <math>25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}</math>, 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 <math>1^{\circ}</math> vertical intervals and <math>15^{\circ}</math> horizontal intervals.</p>
<p><b>2. Photometric and Electrical Measurements – Integrating Sphere Method:</b></p> <p>Photometric parameters were measured using an integrating sphere, as spectroradiometer and software. The ambient temperature condition inside the sphere was measured at <math>25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}</math>. 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)
25.0	40.0	Face Down	90	10

**Electrical Data:**

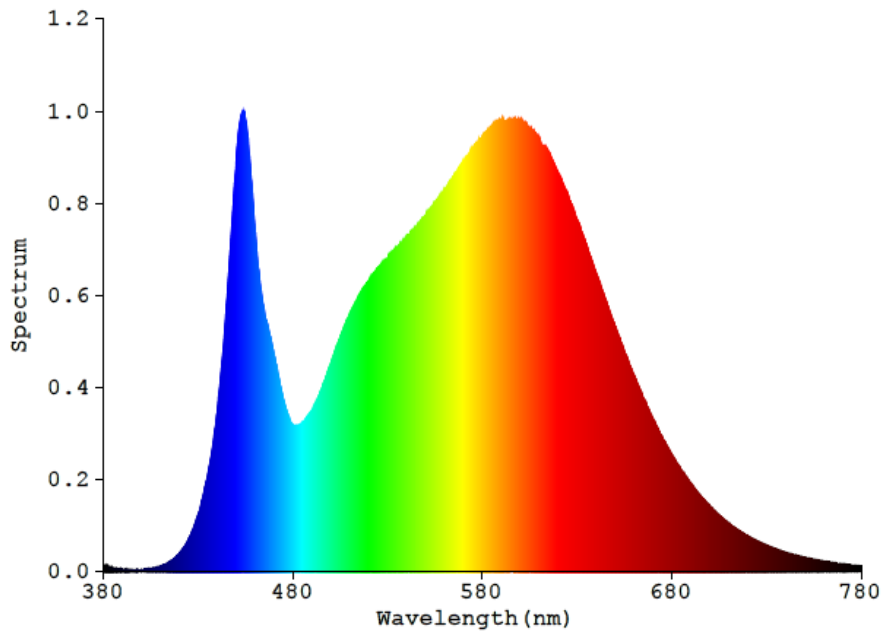
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120	60	0.1336	15.92	0.9902

**Color Data:**

Parameter	Result
CCT(K)	3890
Color Rendering Index (CRI)	84.0
R9	13
Chromaticity, x	0.3861
Chromaticity, y	0.3819
Chromaticity, u'	0.2267
Chromaticity, v'	0.5047
Duv	0.00081

Special Color Rendering			
R1	82	R9	13
R2	91	R10	78
R3	96	R11	81
R4	82	R12	63
R5	82	R13	85
R6	87	R14	98
R7	86	R15	76
R8	65	-	-

**Spectrum Diagram:**



**Goniophotometer Test Results:**

**Test Condition:**

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
25.0	40.0	Face Down	90	25

**Electrical Data:**

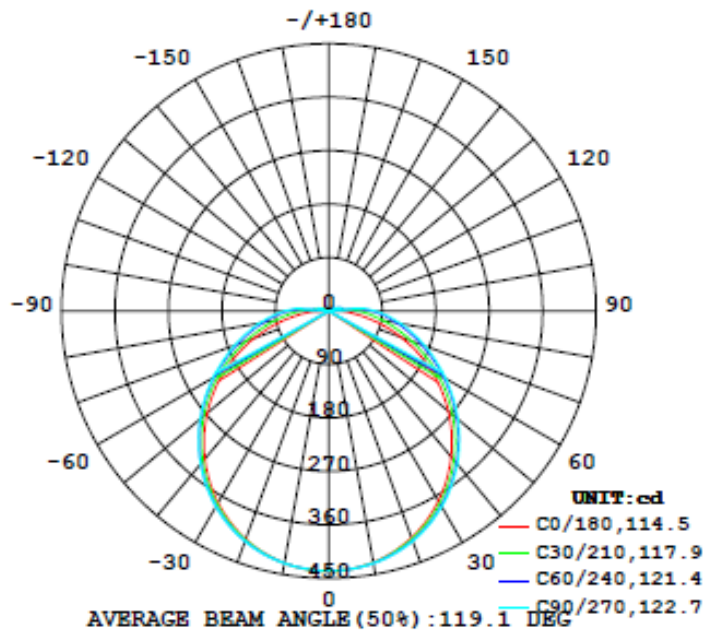
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120	60	0.1336	15.92	0.9902

**Goniophotometer Data:**

Parameter	Results
Total Luminous (lm)	1477.61
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	92.82
Zonal Lumens Distribution (0-90°)	95.9%
Beam Angle (°)	119.1

**Luminous Intensity Distribution Diagram:**

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM

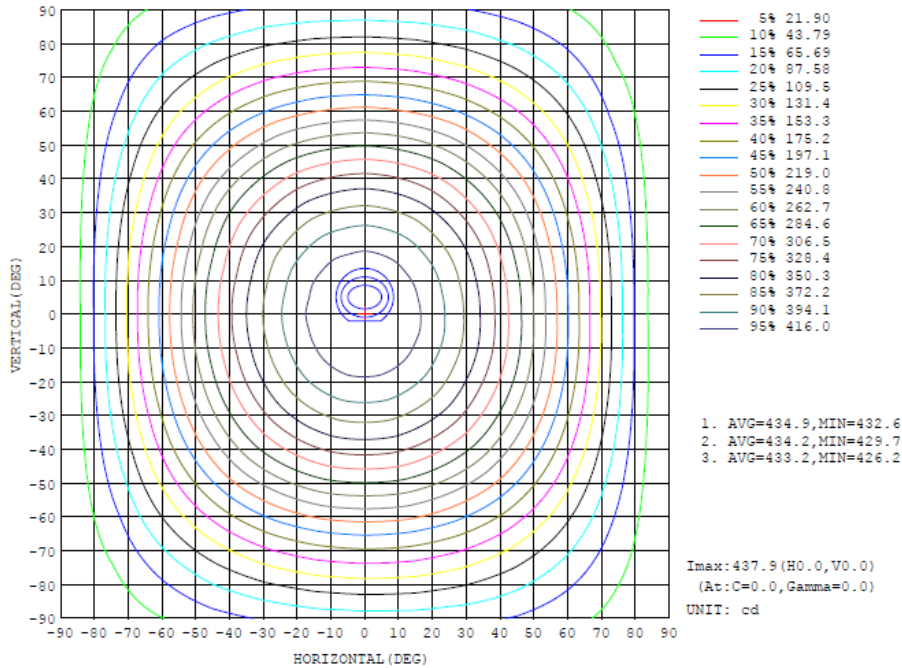


**Zonal Flux Diagram:**

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	lum.lamp
10	429.7	430.7	431.5	430.7	431.0	430.5	431.3	429.6	0- 10	41.43	41.43	2.8,2.8
20	406.9	410.6	412.4	410.9	408.9	410.6	412.5	408.8	10- 20	119.2	160.6	10.9,10.9
30	368.9	377.2	380.2	377.6	372.8	377.3	380.4	374.8	20- 30	182.0	342.6	23.2,23.2
40	320.2	332.1	336.5	332.4	324.9	332.1	336.3	328.9	30- 40	221.9	564.5	38.2,38.2
50	262.9	278.2	284.0	278.9	267.6	277.8	283.1	274.0	40- 50	234.7	799.2	54.1,54.1
60	198.0	218.6	227.1	217.7	202.6	218.0	225.7	213.6	50- 60	220.2	1019	69,69
70	129.6	158.8	172.5	155.8	133.9	157.4	168.8	152.5	60- 70	182.7	1202	81.4,81.4
80	63.32	106.6	123.3	101.6	66.74	102.7	118.7	98.86	70- 80	132.6	1335	90.3,90.3
90	25.39	62.84	78.13	57.62	23.89	59.72	74.60	56.56	80- 90	82.50	1417	95.9,95.9
100	18.18	14.68	0.4912	11.37	15.57	15.86	0.8066	12.56	90-100	28.42	1446	97.8,97.8
110	12.78	14.02	16.16	10.85	10.35	8.959	12.77	12.41	100-110	13.74	1459	98.8,98.8
120	9.315	6.746	7.485	4.875	7.343	4.611	5.415	6.937	110-120	8.375	1468	99.3,99.3
130	3.224	4.099	2.486	4.002	2.587	3.492	2.439	4.859	120-130	4.056	1472	99.6,99.6
140	2.309	3.151	2.867	3.219	3.118	3.028	2.627	3.070	130-140	2.601	1474	99.8,99.8
150	2.205	1.706	2.879	2.071	2.094	2.427	2.727	1.928	140-150	1.604	1476	99.9,99.9
160	2.025	1.908	1.857	1.162	2.614	2.350	2.007	2.392	150-160	0.9477	1477	99.9,99.9
170	1.323	2.870	2.614	3.212	2.081	0.8627	2.307	1.136	160-170	0.5965	1477	100,100
180	1.352	0.9424	0.5042	0.8112	1.355	0.9427	0.5041	0.8129	170-180	0.1605	1478	100,100
DEG	LUMINOUS INTENSITY:cd Less than 35% Percent = 17.9 %								UNIT:lm			

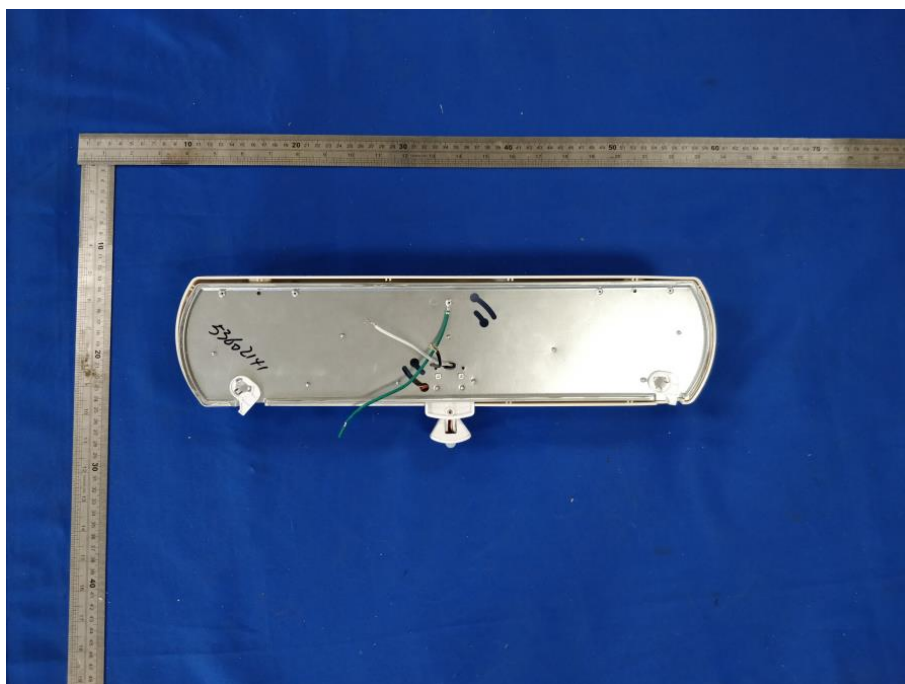
**Isocandela Diagram:**





**Photo of Sample:**

536021##



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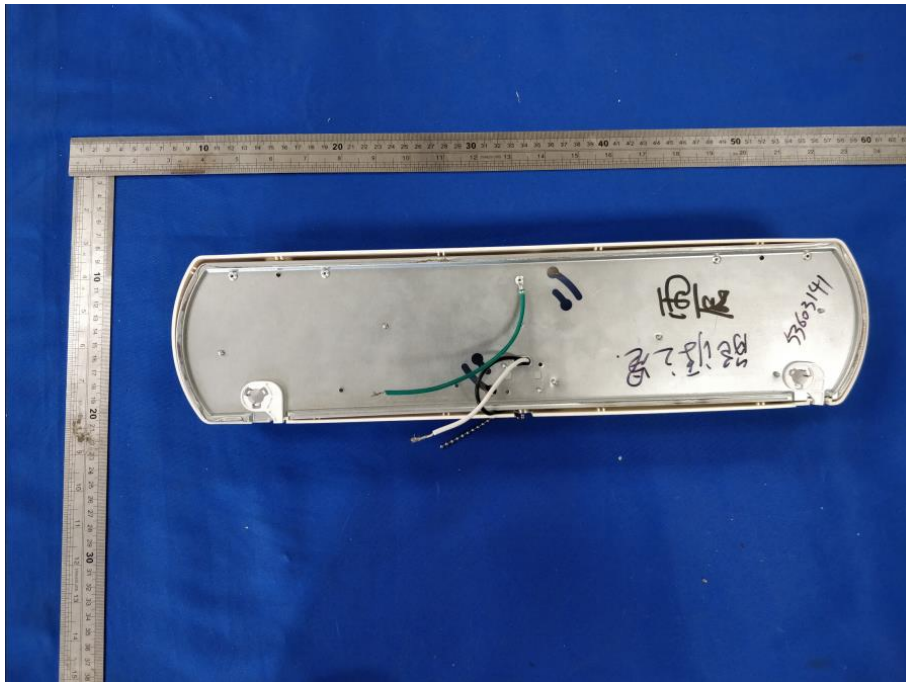
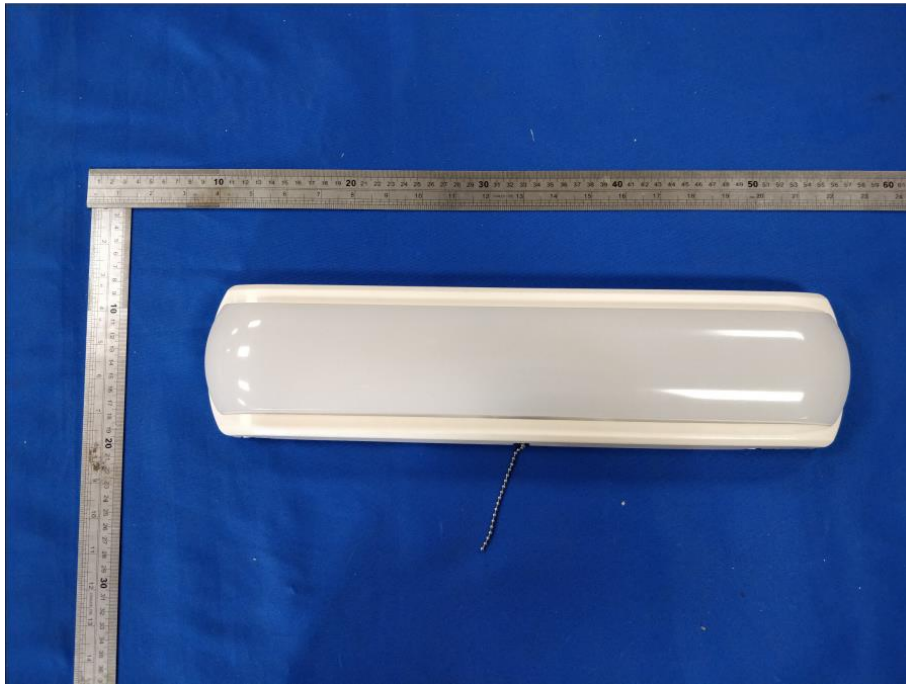
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536031##



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**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