



Report No: NTCR18080021 Report Version: V1.2

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 Cealing 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:

Perele Lai

Engineer: Derek Lai Date: 2018-08-15

Review by:

I fincet Then

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 1st 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:	SPMWHX2286XXXXXXXXX
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 1st 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:	2018-09-07
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.





Test Specification:

2018-08-01
1. Total Luminous Flux
2. Luminous Distribution Intensity
3. Luminous Efficacy
4. Correlated Color Temperature
5. Color Rendering Index
6. Chromaticity Coordinate
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:

1. Photometric and Electrical Measurements – Light Distribution Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25 °C \pm 1°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° horizonal intervals.

2. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric parameters were measured using an integrating sphere, as spectroradiometer and software. The ambient temperature condition inside the sphere was measured at 25 °C \pm 1°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.





Integrating Sphere Test Results:

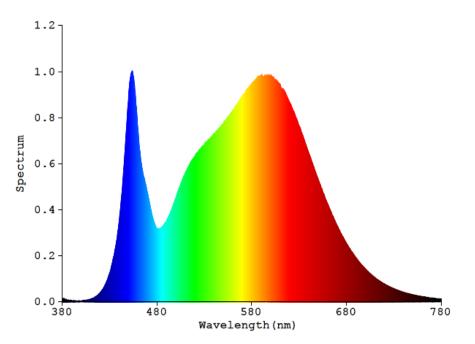
Test Condition:											
Test Ambient (°C)	Test Humidity (%)	Orientation	Stabi	lization Time (minute)	Test Time (minute)						
25.0	40.0	Face Down		90	10						
Electrical Data:											
Voltage (V)	Frequency (Hz)	Current (A	A)	Wattage (W)	Power Factor						
120	60	0.1336		15.92	0.9902						

Color Data:

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								
R 1	82	R 9	13					
R2	91	R10	78					
R3	96	R11	81					
R4	82	R12	63					
R5	82	R13	85					
R6	87	R14	98					
R 7	86	R15	76					
R8	65	-	-					

Spectrum Diagram:







Goniophotemeter Test Results:

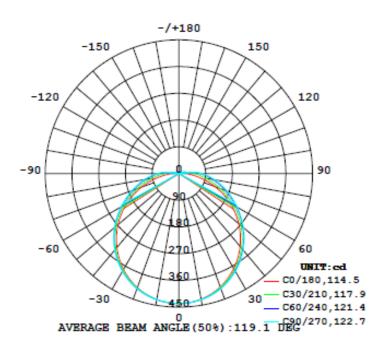
Tes	st Cond	lition:									
Test Ambien	nt (°C)	Test Humidity (%)	Orientation	n Stabi	Test Time (minute)						
25.0		40.0	Face Down	1	90	25					
Ele	Electrical Data:										
Voltage	(V)	Frequency (Hz)	Curre	nt (A)	Wattage (W)	Power Factor					
120		60	0.1	336	0.9902						
Go	oniopho	tometer Data:									
		Parameter			Results						
		Total Lui	minous (lm)		1477.61						
		Total Luminous per	foot (lm/ft)	N/A							
		Luminous Effi	cacy (lm/w)	92.82							
	Zo	onal Lumens Distribu	tion (0-90°)		95.9%						

Luminous Intensity Distribution Diagram:

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM

119.1

Beam Angle (°)



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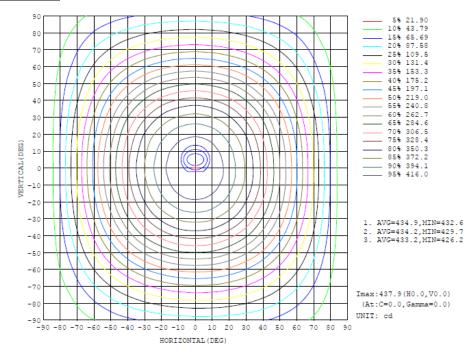
NVLAP LAB CODE 600150-0

Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

۲	C0	C45	C90	C135	C180	C225	C270	C315	Y	o zone	<pre> total </pre>	<lum, lam<="" th=""></lum,>
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	406.3	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	262.3	278.2	284.0	278.3	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	103.7	118.7	98.86	70- 80	132.6	1335	90.3,90.3
90	25.39	63.84	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	13.77	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	3.309	3.151	2.867	3.219	3.118	3.038	2.637	3.070	130-140	2.601	1474	99.8,99.8
150	2.205	1.706	2.879	2.071	2.094	2.437	2.737	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	0.8637	2.307	1.136	160-170	0.5965	1477	100,100
180	1.353	0.9434	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 %									UNI	T:lm	

Isocandela Diagram:







Luminous Distribution Intensity Data:

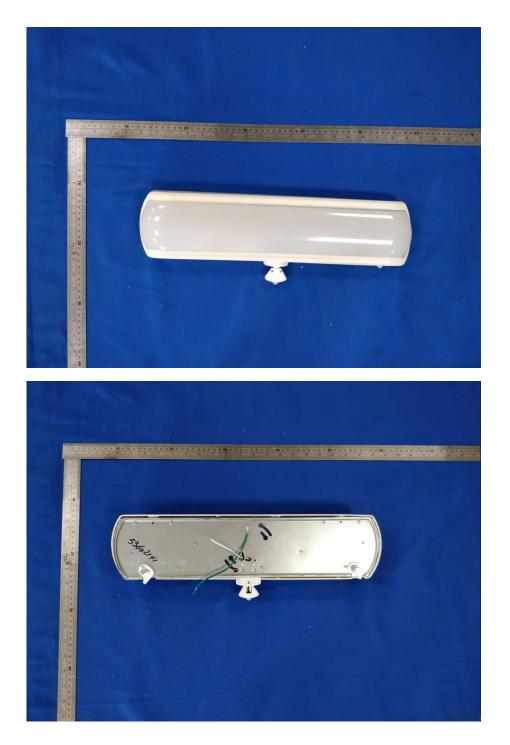
100 15 30 45 60 75 90 105 120 120 125 120	Table1																UNI	T: cd		
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30 990 972 970																				413
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40 320 334 337 334 337 334 337 334 332 335	30	369	372	374	377	379	380	380	381	379	378	375	373	373	373	376	377	380	380	380
etc. gate gate <t< td=""><td>35</td><td>346</td><td></td><td>352</td><td>356</td><td>358</td><td>360</td><td>360</td><td>360</td><td>358</td><td>356</td><td>353</td><td>350</td><td>350</td><td>350</td><td>355</td><td>356</td><td>359</td><td>359</td><td>360</td></t<>	35	346		352	356	358	360	360	360	358	356	353	350	350	350	355	356	359	359	360
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65 144 172 149 187																_		<u> </u>		
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125 8.02 6.04 6.47 4.97 5.81 4.01 4.16 5.27 2.39 4.33 5.56 1.71 5.99 5.22 5.73 3.68 3.49 2.48 2.33 2.44 135 3.59 5.21 4.07 3.54 2.66 2.32 2.55 3.71 2.56 3.57 3.95 4.22 2.57 3.64 2.42 2.43 2.44 140 3.31 4.57 1.38 3.15 2.55 2.73 2.89 3.00 3.01 3.22 2.68 1.39 3.12 2.07 1.24 2.88 2.85 2.71 2.84 2.80 2.81 1.88 2.81 1.88 2.81 1.88 2.81 1.88 2.81 1.88 2.81 1.88 2.81 1.88 2.81 1.88 2.81 1.88 2.81 1.89 1.82 2.81 1.81 2.81 1.81 2.81 1.81 2.81 1.81 2.81 1.81 1.81 2.81 1.81 2.81 2.81 2.81 2.81 2.81		-				_						-						<u> </u>		
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135 3.59 5.21 4.07 3.54 2.64 2.26 2.26 2.27 2.28 2.27 2.28 2.28 2.29 2.28 2.29 2.29 2.29 2.29 2.29 2.29 2.29 2.29 2.29 2.28 2.29 2.28 2.29 2.28 2.29 2.28 2.29 2.28 2.29 2.28 2.29 2.28 2.29 2.28 2.29 2.28 2.29 2.39 2.30 1.00 3.15 2.00 1.28 2.09 2.39 2.30 1.00 3.15 2.00 1.28 2.30 1.28 1.20 1.28 1.20 1.28 1.20 1.28 1.20 1.28 1.20 1.28 1.20 1.21 1.21 1.22 1.28 2.31 1.44 1.28 1.20 1.29 1.20 1.28 1.20 1.21 1.21 1.23 1.20 1.28 1.29 1.20 1.28 1.20 1.28 1.20 1.28 1.20 1.28 1.20 1.28 1.20 1.28 2.28 2.31 1.40	130	-																		-
140 3.31 4.97 1.38 3.15 2.86 2.82 2.86 4.39 3.12 3.86 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.82 2.84 1.02 3.15 2.86 2.44 1.21 1.92 2.44 1.21 1.92 2.44 1.21 1.92 2.44 1.21 1.92 2.44 1.21 1.92 2.44 1.21 1.92 2.44 1.21 1.92 2.44 1.21 1.93 1.42 1.93 1.42 1.93 1.42 1.93 1.32 1.44 1.93 2.13 1.14 1.92 2.74 2.44 1.93 2.71 2.41 1.93 2.71 2.41 1.93 1.92 1.93 1.92 1.93 1.92 1.93 1.92 1.93 1.92 1.93 1.92 1.93 1.92 1.93 1.93 <th< td=""><td>135</td><td>3.59</td><td>5.21</td><td>4.07</td><td>3.54</td><td>2.66</td><td></td><td>2.56</td><td>2.71</td><td></td><td>3.59</td><td>3.76</td><td>3.37</td><td>2.95</td><td>4.32</td><td>2.57</td><td></td><td>2.53</td><td>2.42</td><td>2.42</td></th<>	135	3.59	5.21	4.07	3.54	2.66		2.56	2.71		3.59	3.76	3.37	2.95	4.32	2.57		2.53	2.42	2.42
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	140	3.31	4.57					2.87						3.12	3.86	2.02				
155 2.35 2.44 2.00 0.72 1.92 2.03 1.94 2.01 1.12 2.07 3.92 2.86 1.46 2.91 1.96 1.97 2.33 1.14 160 2.08 2.43 3.01 1.91 0.70 1.20 1.46 1.18 3.03 3.23 2.61 1.26 2.19 2.77 2.77 2.60 3.16 2.08 2.09	145	2.57	3.88	0.49	2.25	2.52	2.73	2.93	3.00	3.07	2.36	1.78	4.10	2.49	3.12	2.07	1.26	2.88	2.85	2.78
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	150	2.21	2.62	1.52	1.71	2.04	2.71	2.88	2.99	2.39	2.07	1.09	3.15	2.09	1.88	2.50	2.44	1.21	1.89	2.74
165 2.18 2.54 3.20 2.65 2.39 1.62 1.72 2.77 2.60 3.18 2.70 2.41 1.89 1.67 2.39 2.60 2.58 2.35 2.36 2.60 1.74 1.82 0.30 2.01 2.37 2.41 1.89 1.67 2.39 2.60 2.41 1.89 1.67 2.39 2.60 2.41 1.89 1.61 2.08 2.60 2.41 1.89 1.61 2.08 2.60 2.41 1.89 1.61 1.62 0.30 1.61 1.81 1.81 1.61 1.81 1.61 1.61 1.65 1.61 <th< td=""><td>155</td><td>2.35</td><td>2.84</td><td>2.00</td><td>0.72</td><td>1.95</td><td>2.03</td><td>1.96</td><td>2.08</td><td>2.11</td><td>1.26</td><td>3.07</td><td>3.92</td><td>2.86</td><td>1.49</td><td>2.91</td><td>1.96</td><td>1.97</td><td>2.13</td><td>1.14</td></th<>	155	2.35	2.84	2.00	0.72	1.95	2.03	1.96	2.08	2.11	1.26	3.07	3.92	2.86	1.49	2.91	1.96	1.97	2.13	1.14
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	160	2.02	2.34	3.01	1.91	0.70	1.20	1.86	1.57	0.60	1.16	3.30	3.53	2.61	1.26	2.49	2.35	1.46	2.18	2.01
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	165	2.18	2.54	3.20	2.65	2.39		1.23	1.57	2.77	2.60	3.18	2.70	2.41	_	1.67	2.39	2.08	2.58	2.37
180 1.35 1.29 1.99 0.94 0.78 0.13 0.50 0.40 0.78 0.81 1.05 1.26 1.35 1.29 1.09 0.78 0.14 0.50 Table2 UNIT: cd UNIT: cd 0 437 437 437 437 437 437 437 435 <t< td=""><td>170</td><td>1.32</td><td></td><td>2.43</td><td>2.87</td><td>_</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2.04</td><td>2.27</td><td></td></t<>	170	1.32		2.43	2.87	_												2.04	2.27	
Table2 UNIT: cd 0 437 4	175						2.42	2.57	2.59	2.40	1.98	1.83	1.84	2.09	1.98	1.75	1.47		0.55	0.61
100 437 438 438 438 <th>C (DEG)</th> <th>285</th> <th>300</th> <th>315</th> <th>330</th> <th>345</th> <th></th>	C (DEG)	285	300	315	330	345														
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Photo of Sample:

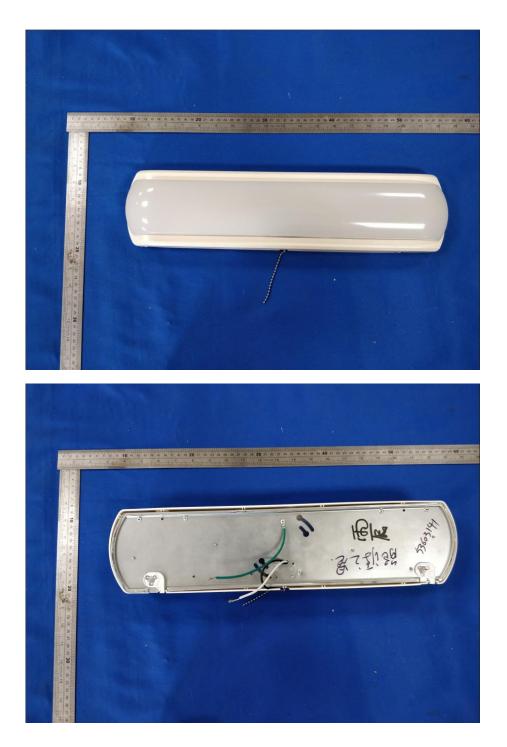
536021##







536031##







Equipment List:

quipment 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