

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

Linear Ambient Luminaire

Model name(s):

546762##-1

Representative (Tested) Model:

54676241

Model Difference: ##=41-50 intends CCT is 4000K

Prepare By:



Engineer: Leo Liu

Date: 2018-04-11

Review By:



Technical Lead: Vincent Yuan

Date: 2018-05-02

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Product Information:

Client Name:	ELEC-TECH INTERNATIONAL CO LTD
Brand Name:	ETI
Model Number:	546762##-1(##=41-50)
Product type:	Linear Ambient Luminaire
Rating Input:	AC120-277V, 50/60Hz, 34W
Declared CCT:	4000K
Declared Light output:	3600lm
LED Manufacturer:	SAMSUNG
LED Model:	SPMWHX228FD5WAW0XX
LED Quantity:	242 pcs
Forward current of LED Chip:	160 mA
Date of Receipt Samples:	2018-04-01
Quantity of Receipt Samples:	2
Sample Number:	180401002-S1

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:	2018-05-02
Revised Date of Test Report:	N/A
Test Report No.:	NTCR18040010
Remark (If applicable)	N/A

Test Specifications:	
Date of Test`	2018-04-11
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 C78.377-2008 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, 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 120 Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1° vertical intervals and 22.5° Vertical intervals.</p>
<p>2. Photometric and Electrical Measurements – Integrating Sphere Method:</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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 120 Volts AC, 60Hz. 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 5 nm intervals over the range of 380 to 780 nm.</p>

Integrating Sphere Test Results

Test Condition:

Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
24.9 °C	51 %	Face Down	90 mins	25 mins

Electrical Data:

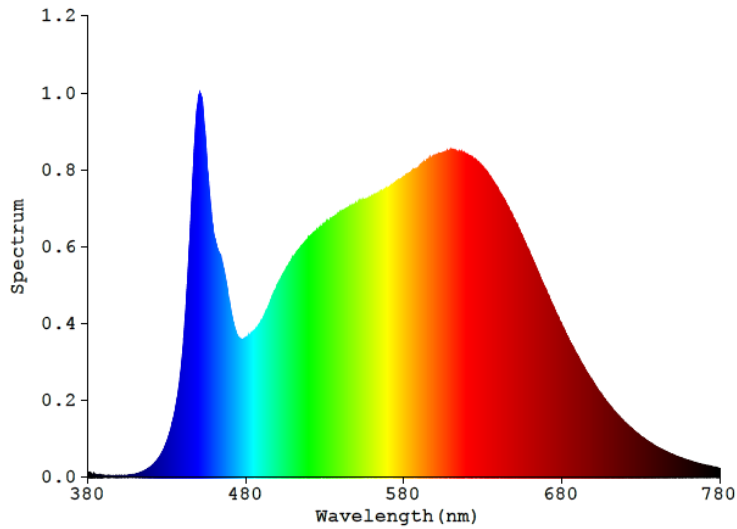
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.2870	34.02	0.9873

Color Data:

Parameter	Result
CCT (K)	3974
Color Rendering Index (CRI)	93.3
R9	64
Chromaticity, x	0.3812
Chromaticity, y	0.3760
Chromaticity u'	0.2259
Chromaticity v'	0.5014
Duv	-0.00056

Special Color Rendering			
R1	94	R9	64
R2	97	R10	90
R3	97	R11	93
R4	93	R12	73
R5	93	R13	95
R6	94	R14	98
R7	94	R15	91
R8	86	-	-

Spectrum Diagram:



Goniophotometer Test Results:

Test Condition:

Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
25.2 °C	50 %	Face Down	90 mins	25 mins

Electrical Data:

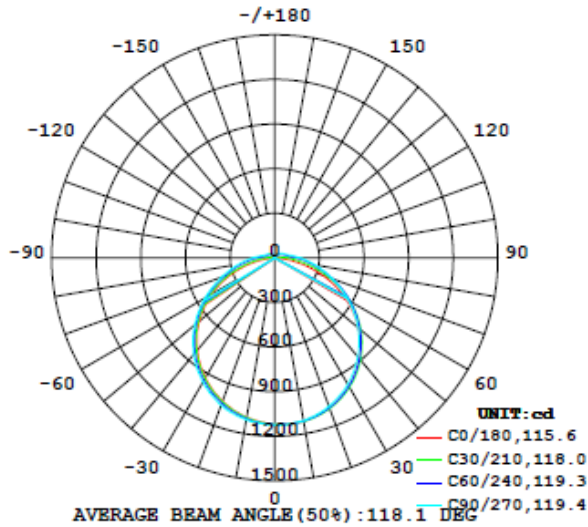
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.2870	34.02	0.9873

Goniophotometer Data:

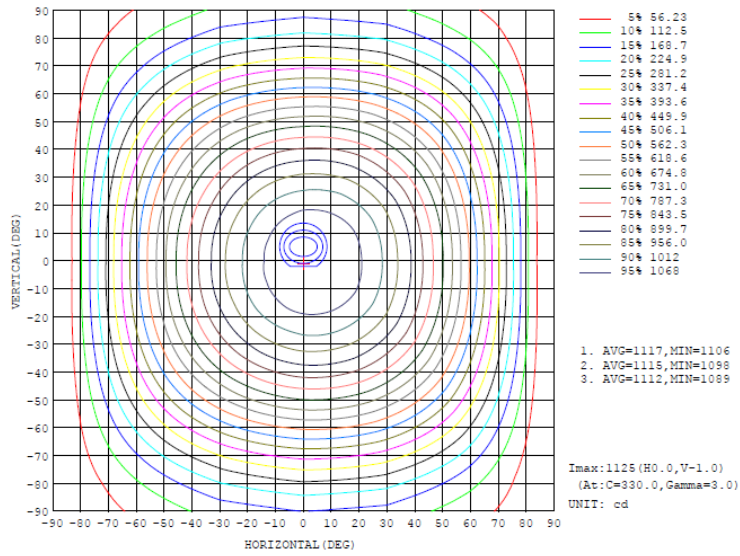
Parameter	Result
Total Luminous (lm)	3746.43
Total Luminous per foot (lm/ft)	936.61
Luminous Efficacy (lm/w)	110.12
Zonal Lumens Distribution (0-60°)	70.2%
Beam Angle (°)	118.1

Luminous Intensity Distribution Diagram:

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



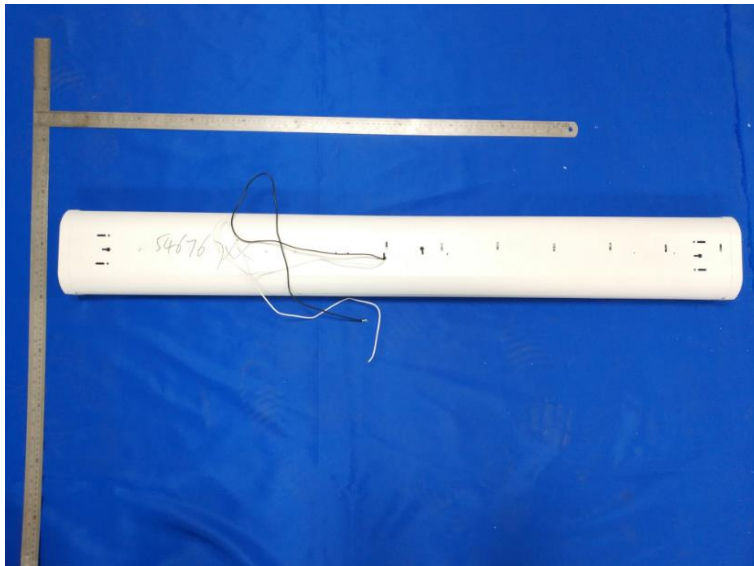
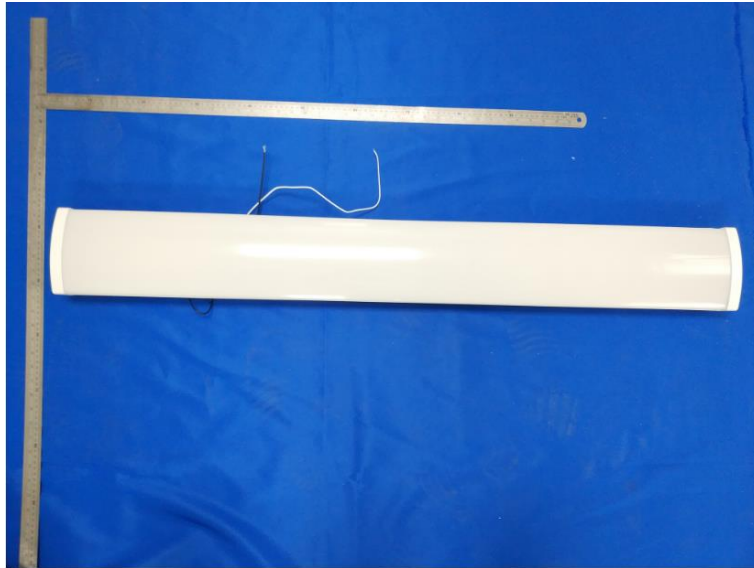
Isocandela Diagram:



Zonal Flux Diagram:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ none	Φ total	Num.Lamp
10	1116	1116	1112	1099	1091	1096	1106	1116	0- 10	106.3	106.3	2,842,2,84
20	1078	1076	1062	1042	1027	1038	1055	1071	10- 20	306.5	412.8	11,111
30	996.2	1000	981.7	955.2	932.4	946.2	965.1	991.5	20- 30	469.4	892.2	23.5,23.5
40	882.2	890.6	867.8	828.2	811.8	826.9	847.4	876.7	30- 40	574.2	1456	38.9,38.9
50	734.6	780.6	729.8	695.8	662.2	681.6	702.7	732.4	40- 50	607.5	2064	55.1,55.1
60	552.7	595.2	571.5	522.9	490.3	516.9	541.7	561.5	50- 60	564.5	2628	70.2,70.2
70	344.0	402.7	412.0	360.8	299.3	342.1	380.8	376.2	60- 70	452.0	3080	82.2,82.2
80	127.0	231.5	274.1	204.1	105.5	189.5	245.2	206.6	70- 80	296.9	2377	90.1,90.1
90	0.1159	114.9	169.9	101.5	0.1684	90.62	147.0	96.13	80- 90	152.4	2531	94.2,94.2
100	0.2604	62.59	104.6	57.94	0.5362	50.65	88.57	52.09	90-100	76.68	2607	96.2,96.2
110	0.6951	47.29	72.20	42.81	0.8594	28.96	62.04	39.88	100-110	48.23	2656	97.6,97.6
120	1.075	37.24	59.74	34.98	1.235	20.85	51.69	31.68	110-120	35.20	2691	98.5,98.5
130	1.220	26.78	42.36	25.15	1.552	22.92	38.29	22.44	120-130	24.92	2716	99.2,99.2
140	1.509	20.29	32.21	19.27	1.837	16.71	27.92	16.67	130-140	15.74	2732	99.6,99.6
150	1.422	12.85	22.07	12.49	1.475	11.98	19.11	11.12	140-150	9.251	2741	99.9,99.9
160	1.359	6.407	12.15	6.221	1.528	5.964	10.58	5.887	150-160	4.189	2745	100,100
170	1.250	2.087	3.477	1.879	1.489	1.989	3.419	2.245	160-170	1.200	2746	100,100
180	1.752	1.744	1.220	1.754	1.751	1.746	1.228	1.755	170-180	0.1749	2746	100,100
DEG	LUMINOUS INTENSITY:cd Less than 25% Percent = 15.8 %										UNIT:lm	

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-F01-013	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



NVLAP LAB CODE 600150-0

Report No: NTCR18040010
Report Version: V1.1

*******END OF DATASHEET*******