

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):

546763##-1

Representative (Tested) Model:

54676341-1

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:	546763##-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:	154 pcs
Forward current of LED Chip:	160 mA
Date of Receipt Samples:	2018-04-01
Quantity of Receipt Samples:	2
Sample Number:	180401001-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.:	NTCR18040007
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:

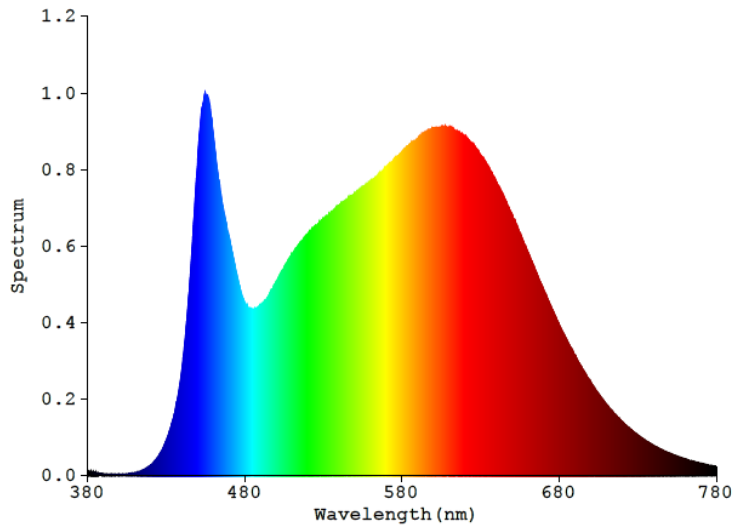
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.2920	34.62	0.9880

Color Data:

Parameter	Result
CCT (K)	3977
Color Rendering Index (CRI)	92.3
R9	60
Chromaticity, x	0.3800
Chromaticity, y	0.3720
Chromaticity u'	0.2267
Chromaticity v'	0.4994
Duv	-0.00211

Special Color Rendering			
R1	93	R9	60
R2	99	R10	95
R3	97	R11	91
R4	90	R12	73
R5	92	R13	96
R6	94	R14	99
R7	90	R15	90
R8	82	-	-

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:

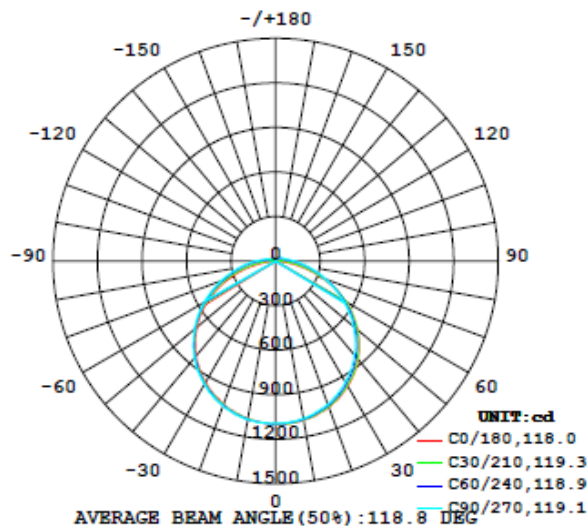
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.2920	34.62	0.9880

Goniophotometer Data:

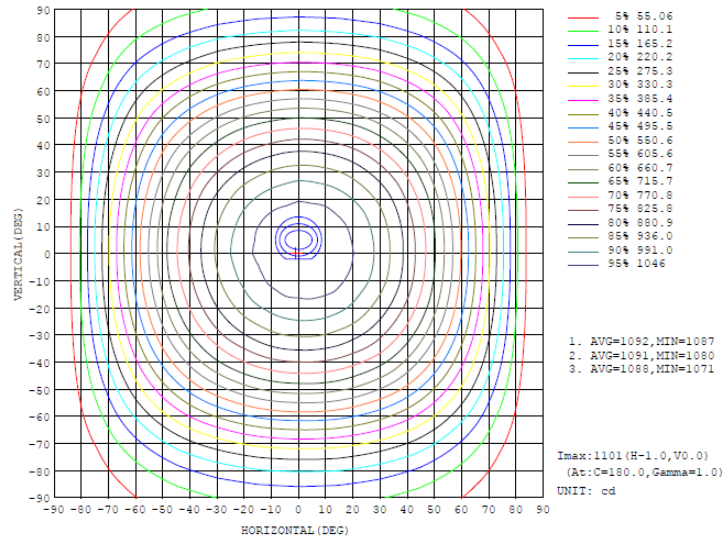
Parameter	Result
Total Luminous (lm)	3622.47
Total Luminous per foot (lm/ft)	905.62
Luminous Efficacy (lm/w)	104.62
Zonal Lumens Distribution (0-60°)	71.5%
Beam Angle (°)	118.8

Luminous Intensity Distribution Diagram:

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



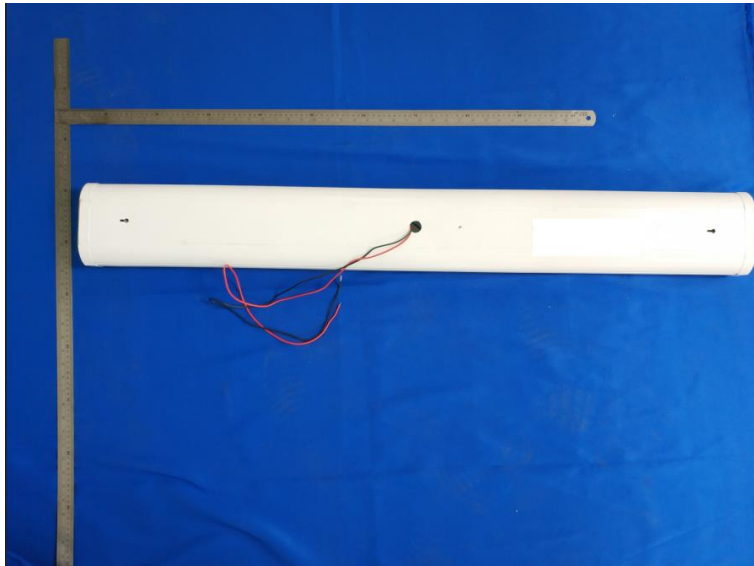
Isocandela Diagram:



Zonal Flux Diagram:

y	C0	C45	C90	C135	C180	C225	C270	C315	y	Φ zone	Φ total	Φlum, Lamp
10	1088	1086	1077	1072	1076	1080	1082	1086	0- 10	108.9	108.9	1.87,2.87
20	1047	1028	1026	1021	1026	1030	1037	1046	10- 20	299.8	408.7	11.1,11.1
30	970.4	961.1	941.3	938.1	942.8	952.1	960.0	972.8	20- 30	460.4	864.1	22.5,23.9
40	864.4	851.8	824.8	826.4	822.4	842.8	851.1	866.9	30- 40	568.5	1430	39.8,39.5
50	720.9	710.7	682.2	685.0	690.8	705.2	714.7	730.2	40- 50	600.5	2030	86,86
60	544.4	542.0	521.3	521.0	520.9	544.3	557.4	566.7	50- 60	558.7	2589	71.5,71.5
70	337.9	357.4	359.2	340.7	323.5	366.3	392.8	381.9	60- 70	444.9	3034	52.7,52.7
80	122.2	192.0	228.0	184.2	119.8	202.5	248.3	210.2	70- 80	285.7	3319	91.6,91.6
90	0.1474	88.98	131.5	86.07	0.1750	90.66	138.8	92.24	80- 90	138.7	3458	95.5,95.5
100	0.2001	47.16	77.20	48.47	0.2440	40.16	72.82	40.62	90-100	61.95	3520	97.2,97.2
110	0.2114	37.48	56.52	35.78	0.4108	29.05	46.59	29.92	100-110	26.11	3556	98.2,98.2
120	0.4413	30.15	46.86	28.61	0.4473	22.19	37.29	22.15	110-120	26.40	3593	98.9,98.9
130	0.5582	21.32	26.09	20.29	0.5807	16.74	26.72	16.55	120-130	18.42	3601	99.4,99.4
140	0.6266	16.02	24.65	15.46	0.7299	12.02	20.32	11.60	130-140	11.41	3612	99.7,99.7
150	0.6699	9.958	16.86	9.685	0.9116	7.551	12.19	7.144	140-150	6.514	3619	99.9,99.9
160	0.7570	4.276	8.874	4.270	1.005	2.089	6.625	2.879	150-160	2.795	3622	100,100
170	0.8324	0.8877	1.892	0.8725	0.9920	1.026	1.395	1.044	160-170	0.7045	3622	100,100
180	0.9277	0.9240	0.9607	0.9151	0.9262	0.9262	0.9262	0.9173	170-180	0.0919	3622	100,100
DEG	LUMINOUS INTENSITY:cd Less than 25% Percent = 15.1 %								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

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