

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 Linear Ambient Light

Model Name(s):

565131##

Representative (Tested) Model:

56513141

Model Difference: ##=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 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan,
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Tel: 86-769-89874553

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

Product Information:

Client Name:	ELEC-TECH INTERNATIONAL CO LTD
Brand Name:	ETI
Model Number:	565131## (##=41-50)
Product Type:	Indoor, Inseparable SSL Luminaire
Rating Input:	120-277Vac, 50/60Hz, 40W
Declared CCT:	4000K
Declared Light Output:	3600lm
LED Manufacturer:	Samsung
LED Model:	SPMWH1228FD5WARGMC
LED Quantity:	150pcs

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:	S18073104-S1~S3

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:	2018-09-07
Revised Date of Test Report:	N/A
Test Report No.:	NTCR18080017
Remark (If applicable):	N/A

Test Specification:	
Date of Test	2018-08-02
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)
24.4	40.4	Face Down	90	10

Electrical Data:

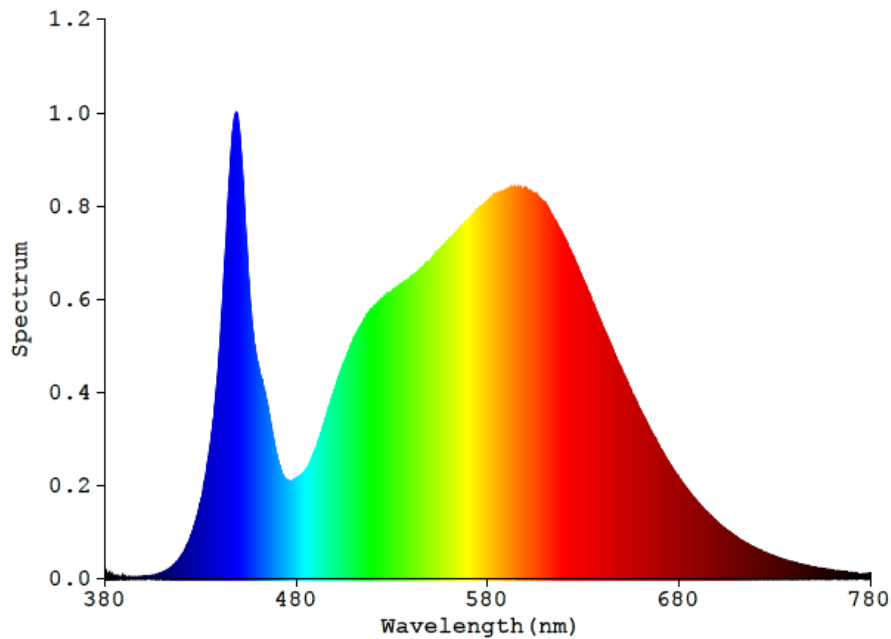
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120	60	0.3292	39.05	0.9894

Color Data:

Parameter	Result
CCT(K)	3999
Color Rendering Index (CRI)	82.9
R9	11
Chromaticity, x	0.3811
Chromaticity, y	0.3790
Chromaticity, u'	0.2246
Chromaticity, v'	0.5027
Duv	0.00085

Special Color Rendering			
R1	81	R9	11
R2	88	R10	71
R3	93	R11	83
R4	83	R12	63
R5	81	R13	83
R6	83	R14	96
R7	87	R15	75
R8	66	-	-

Spectrum Diagram:



Goniophotometer Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
24.3	40.4	Face Down	90	25

Electrical Data:

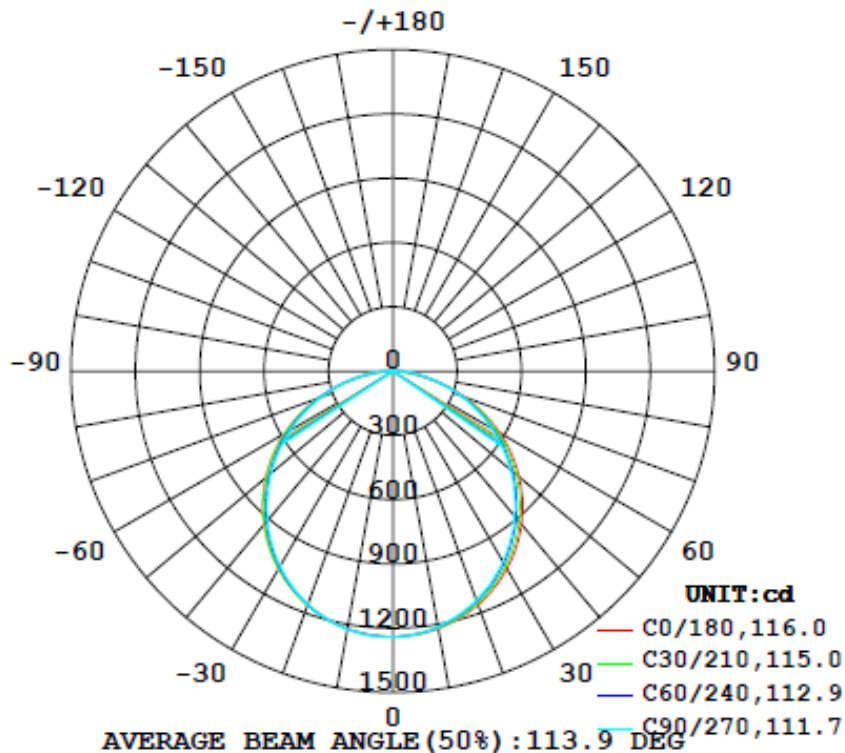
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120	60	0.3291	39.04	0.9894

Goniophotometer Data:

Parameter	Results
Total Luminous (lm)	3640.01
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	93.25
Zonal Lumens Distribution (0-90°)	99.3%
Beam Angle (°)	113.9

Luminous Intensity Distribution Diagram:

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	● zone	● total	lum./lamp	
10	1220	1215	1211	1213	1220	1221	1222	1221	0- 10	117.3	117.3	3.22,3.22	
20	1160	1148	1138	1146	1161	1161	1158	1161	10- 20	336.1	453.4	12.5,12.5	
30	1064	1044	1026	1042	1065	1060	1051	1060	20- 30	610.3	863.7	26.5,26.5	
40	932.1	906.0	882.6	905.5	934.9	923.2	909.2	922.7	30- 40	617.3	1581	43.4,43.4	
50	768.1	740.5	715.1	741.6	773.9	755.1	740.1	755.6	40- 50	642.9	2225	61.1,61.1	
60	574.6	552.5	530.3	554.7	584.1	569.2	551.8	563.8	50- 60	587.0	2812	77.3,77.3	
70	356.0	346.9	336.4	352.3	370.4	363.6	352.7	355.0	60- 70	452.4	3265	89.7,89.7	
80	131.2	146.0	155.5	152.3	147.3	160.6	166.3	150.6	70- 80	264.5	3530	97,97	
90	0.1032	22.84	36.42	25.64	3.395	27.60	41.17	22.00	80- 90	82.93	3613	99.2,99.2	
100	0.5741	1.125	1.045	0.8347	0.5302	0.9277	1.005	1.502	90-100	7.802	3621	99.5,99.5	
110	2.992	2.636	2.394	2.217	2.807	2.842	2.707	3.021	100-110	1.907	3622	99.5,99.5	
120	2.822	4.216	3.002	3.457	3.208	4.160	3.555	4.391	110-120	2.091	3626	99.6,99.6	
130	3.229	5.609	4.477	4.781	3.892	5.430	5.041	5.861	120-130	3.667	3629	99.7,99.7	
140	3.274	6.119	5.826	5.561	3.241	5.026	5.461	5.747	130-140	2.926	3633	99.8,99.8	
150	3.014	2.996	6.248	2.766	3.619	2.130	5.986	3.154	140-150	3.043	3636	99.9,99.9	
160	2.972	6.776	2.168	7.290	2.423	8.364	2.939	8.637	150-160	2.049	3638	100,100	
170	2.450	4.757	5.001	4.272	2.848	4.579	4.936	4.713	160-170	1.417	3640	100,100	
180	1.745	1.795	0.8729	1.788	1.743	1.796	0.8755	1.786	170-180	0.3543	3640	100,100	
DEG										LUMINOUS INTENSITY:cd		Less than 35% Percent = 14.0 %	UNIT:lm

Isocandela Diagram:

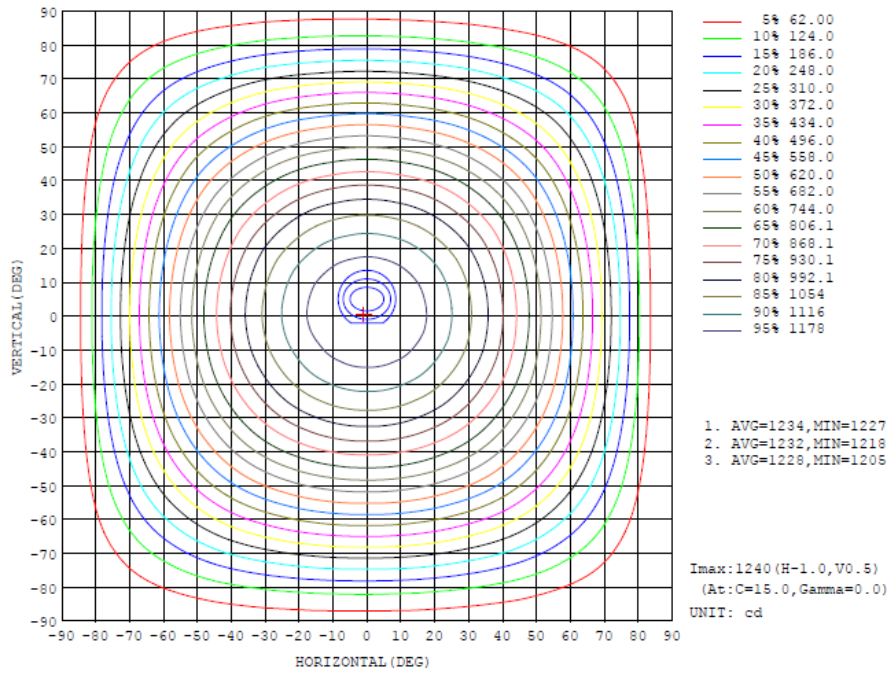
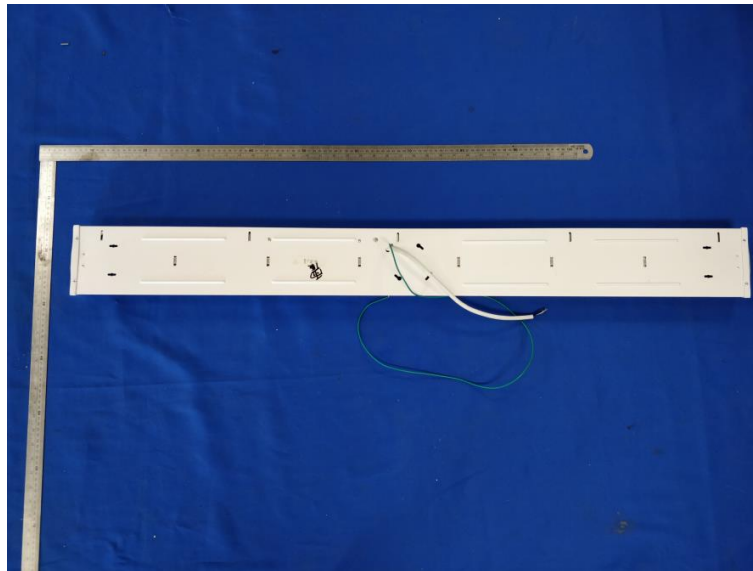
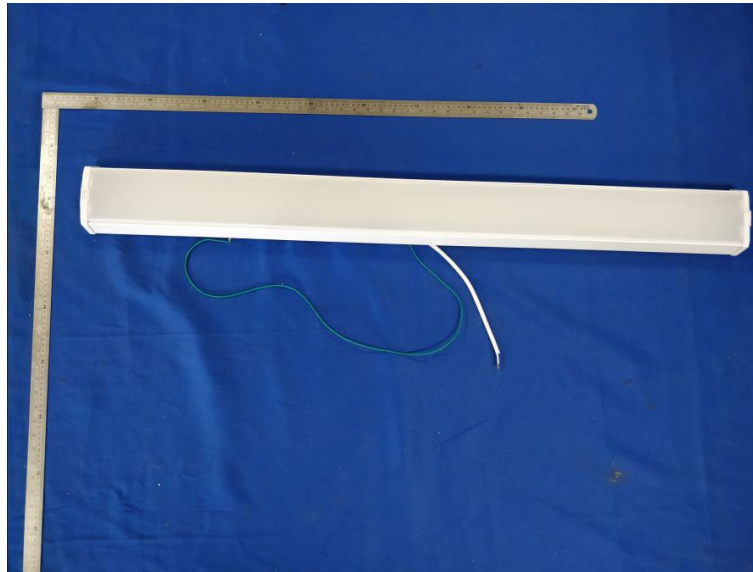


Photo of Sample:



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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