

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 Tube Lamp

Model name(s):

542173XX

Representative (Tested) Model:

54217341

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

Prepare By:

Review By:

Engineer: Derek Lai

Technical Lead: Vincent Yuan

Date: 2018-06-05

Date:

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:	542173XX(XX=41-50)
Product type:	Replacement Lamps ("Plug and Play") (UL type A)
Rating Input:	120-277Vac, 50/60Hz, 16W
Declared CCT:	4000K
Declared Light Output	2000lm
LED Manufacturer:	EVERLIGHT
LED Model:	67-21S
LED Quantity:	90 pcs
Forward current of LED	150mA
Date of Receipt Samples:	2018-05-21
Quantity of Receipt Samples:	2
Sample Number:	180521002-S1~S2
Test Troffer:	Lithonia 2GT8 lensed 2x4
Test Ballast:	SYLVANIA QTP 2X32WT8/UNV ISN-SC

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:	
Revised Date of Test Report:	N/A
Test Report No.:	NTCR18060004
Remark (If applicable)	N/A

Test Specifications:	
Date of Test	2018-06-01
Test item	1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. THD and PF
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 DLC Technical Requirement V4.2

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>
<p>3. THD and PF measurements</p> <p>The sample was tested according to the ANSI C82.77-2002, the sample was operated at rated voltage and was stabilized before measurement. The total harmonic distortion were calculated from the digital power meter.</p>

Integrating Sphere Test Results (Bare Lamp)

Test Condition:

Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
25.4 °C	41 %	Face Down	90 min	25 min

Electrical Data:

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.1286	15.39	0.9975

Output Data:

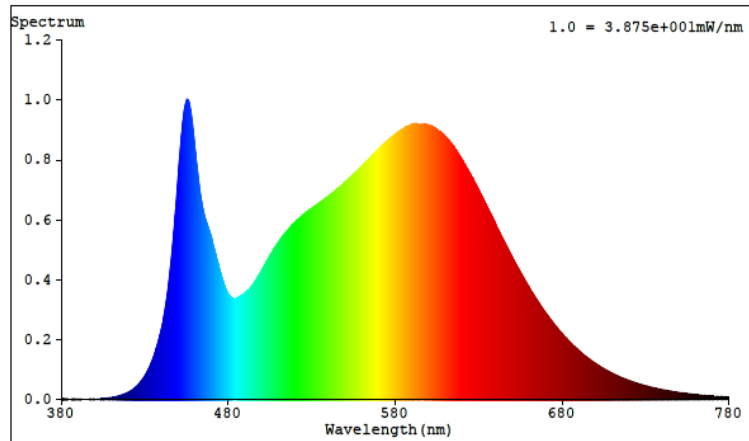
Light Output (lm)	Efficacy (lm/W)
2046.7	132.96

Color Data:

Parameter	Result
CCT (K)	3961
Color Rendering Index (CRI)	83.7
R9	11
Chromaticity, x	0.3834
Chromaticity, y	03822
Chromaticity u'	0.3349
Chromaticity v'	0.5044
Duv	0.00168

Special Color Rendering			
R1	82	R9	11
R2	92	R10	81
R3	96	R11	79
R4	80	R12	62
R5	82	R13	85
R6	88	R14	98
R7	85	R15	76
R8	64	-	-

Spectrum Diagram:



Goniophotometer Test Results (Test in Troffer)

Test Condition:

Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
24.9 °C	40.6 %	Face Down	90 min	25 min

Electrical Data:

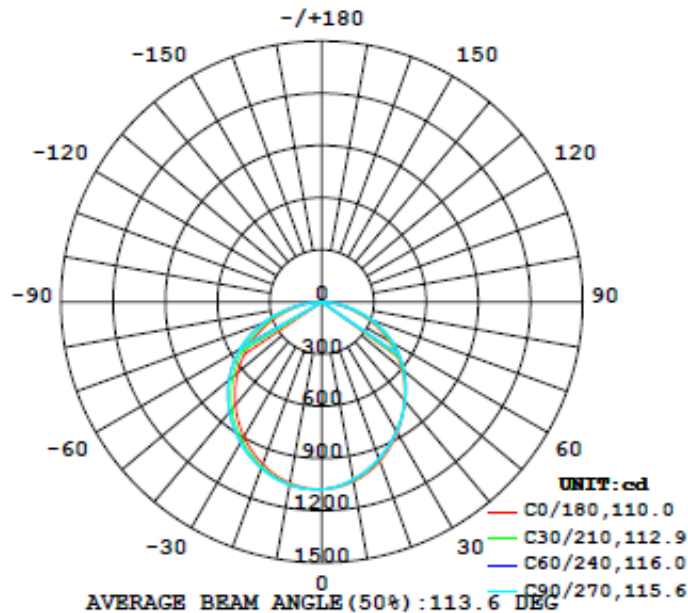
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.2654	31.69	0.9948

Goniophotometer Data:

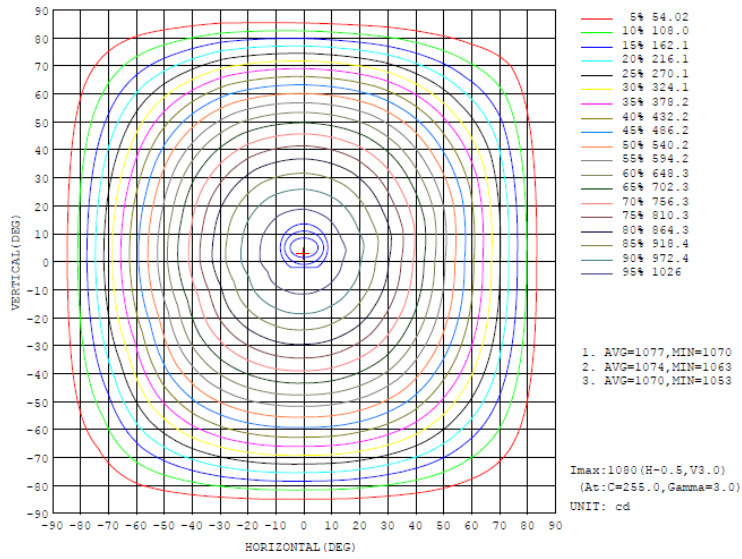
Parameter	Result
Total Luminous (lm)	3109.22
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	98.11
Zonal Lumens Distribution (0-60°)	77.4%
Spacing Criterion (0-180)	1.20
Spacing Criterion (90-270)	1.24
Beam Angle (°)	113.6

Luminous Intensity Distribution Diagram:

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



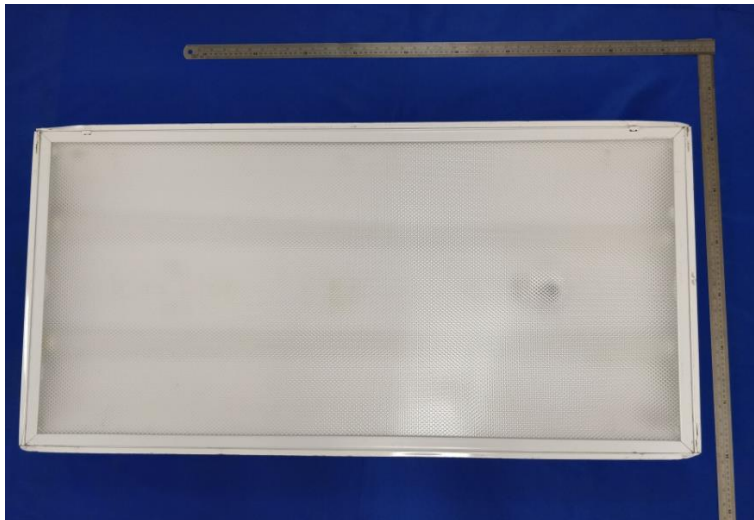
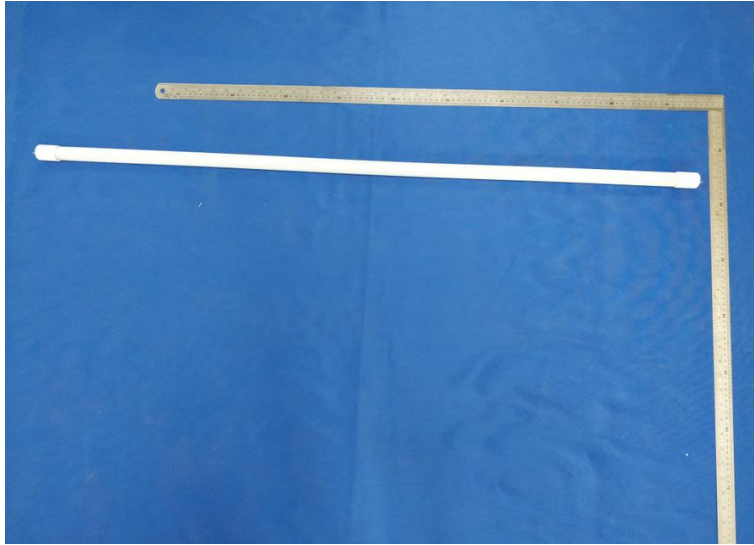
Isocandela Diagram:

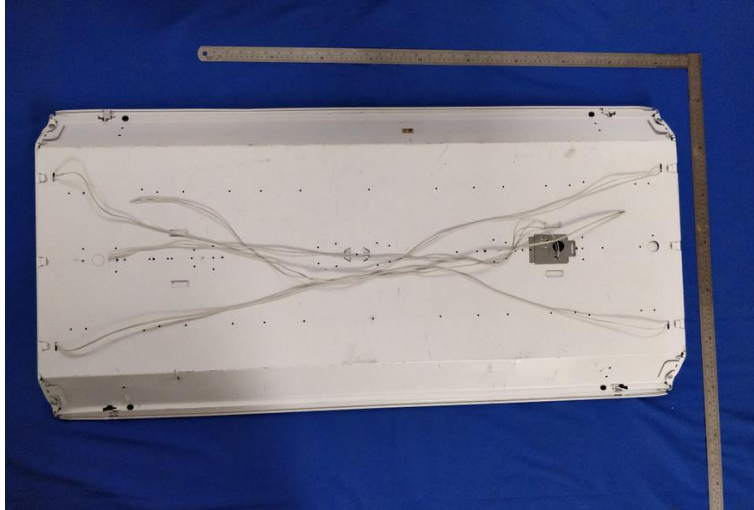


Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

y	C0	C45	C90	C135	C180	C225	C270	C315	y	● none	● total	lum.lamp
10	1049	1040	1026	1044	1057	1066	1069	1061	0-10	101.7	101.7	9.27,9.27
20	974.9	961.6	959.5	972.0	993.7	1013	1018	1002	10-20	288.9	390.5	12.6,12.6
30	867.8	860.7	859.2	875.2	896.2	928.2	934.2	912.8	20-30	494.3	824.8	26.5,26.5
40	742.0	746.2	743.8	760.0	773.6	817.4	827.1	801.4	30-40	523.3	1348	43.4,43.4
50	600.5	617.9	616.3	632.0	631.0	685.9	697.3	669.4	40-50	549.3	1897	61,61
60	443.7	471.1	474.6	486.1	472.9	530.3	541.9	510.7	50-60	509.6	2407	77.4,77.4
70	272.4	300.0	310.5	313.8	299.2	344.7	358.8	322.2	60-70	401.5	2808	90.3,90.3
80	101.0	120.6	134.7	130.2	123.4	147.0	156.4	123.7	70-80	234.7	3043	97.9,97.9
90	0.2274	0.1465	0.3302	0.2397	1.945	4.345	0.6201	0.4854	80-90	59.61	3103	99.9,99.9
100	0.3433	1.050	0.8629	1.211	0.5269	1.827	1.441	1.671	90-100	0.6124	3103	99.9,99.9
110	0.5680	0.7194	1.806	0.8483	0.7737	1.044	1.910	0.9621	100-110	1.293	3105	99.9,99.9
120	0.6669	1.278	0.9895	1.314	0.8994	1.150	0.9927	1.046	110-120	1.022	3106	99.9,99.9
130	0.6730	1.264	1.282	1.361	0.7950	1.264	1.148	0.9981	120-130	0.9836	3107	99.9,99.9
140	0.7784	1.064	1.244	1.234	0.9171	1.326	1.237	1.248	130-140	0.9653	3108	99.9,99.9
150	0.9034	1.274	1.022	1.277	1.004	1.137	1.267	1.123	140-150	0.6895	3108	100,100
160	0.8710	1.130	1.310	1.375	1.006	1.246	1.191	1.320	150-160	0.5100	3109	100,100
170	0.9492	1.139	1.135	1.105	1.019	1.261	0.9830	1.259	160-170	0.2139	3109	100,100
180	1.249	1.241	1.190	1.115	1.247	1.242	1.195	1.119	170-180	0.1091	3109	100,100
DEG	LUMINOUS INTENSITY:cd Less than 95% Percent = 14.2 %										UNIT:lm	





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-F01-002	Digital Power Meter	2017-11-18	2018-11-17
NTC-F01-020	Temperature & Humidity Meter	2017-11-23	2018-11-22



NVLAP LAB CODE 600150-0

Report No: NTCR18060004
Report Version: V1.1

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