

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 Vapor Tight Light

Model name(s):

544651##

Representative (Tested) Model:

54465141

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

Prepare By:



Engineer: Leo Liu

Date: 2017-07-31

Review By:



Technical Lead: Vincent Yuan

Date: 2017-07-31

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:	544651## (## =41-50)
Product type:	Direct Linear Ambient Luminaires
Rating Input:	AC120-277V, 50/ 60Hz, 51W
Declared CCT:	4000K
Declared Light output:	5400 lm
LED Manufacturer:	Samsung
LED Model:	SPMWH1228
LED Quantity:	176 pcs
Forward current of LED Chip:	150mA
Date of Receipt Samples:	2017-09-13
Quantity of Receipt Samples:	1
Sample Number:	170913003-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:	2017-10-19
Revised Date of Test Report:	N/A
Test Report No.:	NTCR17070057
Remark (If applicable)	N/A

Test Specifications:	
Date of Test	2017-09-14
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

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

Test Condition:

Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
25.0 °C	38 %	Face Down	90 min	25 min

Electrical Data:

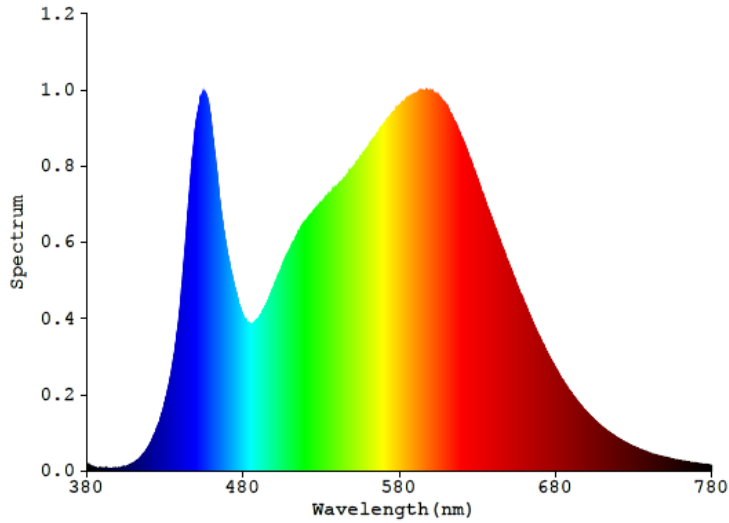
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.4309	50.86	0.9839

Color Data:

Parameter	Result
CCT (K)	4085
Color Rendering Index (CRI)	85.4
R9	20
Chromaticity, x	0.3758
Chromaticity, y	0.3707
Chromaticity u'	0.2245
Chromaticity v'	0.4982
Duv	-0.00149

Special Color Rendering			
R1	85	R9	20
R2	93	R10	82
R3	96	R11	82
R4	83	R12	67
R5	84	R13	87
R6	89	R14	98
R7	86	R15	79
R8	68	-	-

Spectrum Diagram:



Goniophotometer Test Results:

Test Condition:

Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
24.6 °C	37 %	Face Down	90 min	25 min

Electrical Data:

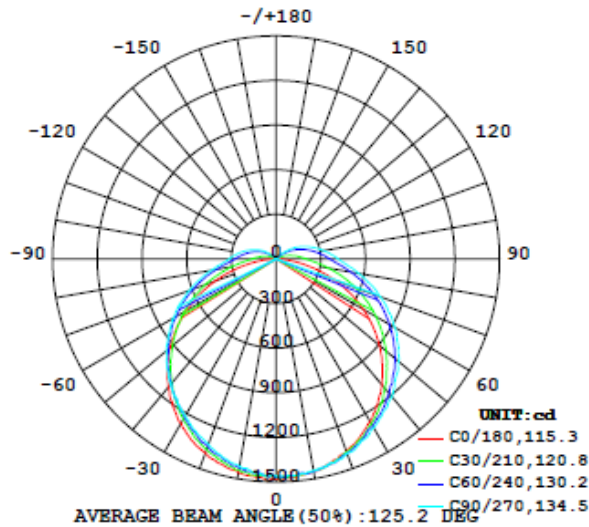
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.4309	50.86	0.9839

Goniophotometer Data:

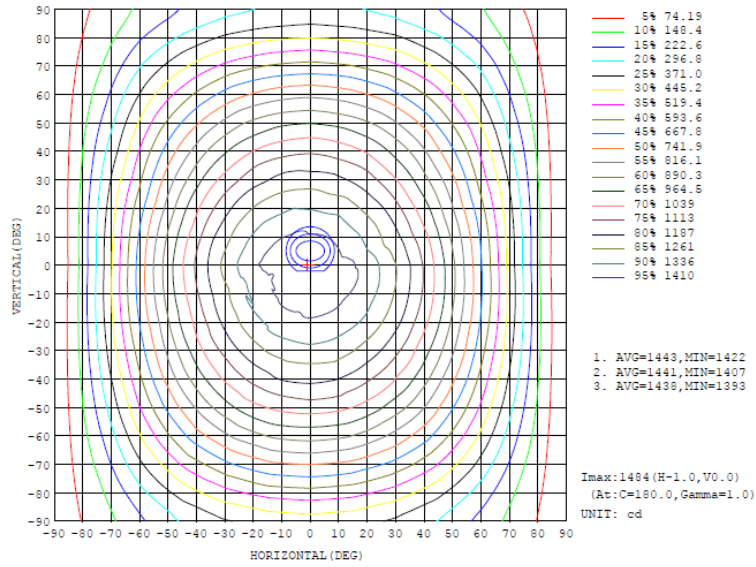
Parameter	Result
Total Luminous (lm)	5481.7
Total Luminous per foot (lm/ft)	1370.4
Luminous Efficacy (lm/w)	107.77
Zonal Lumens Distribution (0-60°)	63.5%
Beam Angle (°)	125.2

Luminous Intensity Distribution Diagram:

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



Isocandela Diagram:



Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ none	Φ total	lum.lamp
10	1450	1449	1446	1437	1437	1422	1416	1419	0- 10	138.2	138.2	2.52, 2.52
20	1391	1388	1382	1382	1388	1349	1328	1324	10- 20	397.2	535.6	9.77, 9.77
30	1264	1287	1311	1292	1278	1236	1220	1211	20- 30	607.8	1143	20.9, 20.9
40	1106	1158	1211	1158	1127	1085	1102	1070	30- 40	748.5	1892	24.5, 24.5
50	904.7	1007	1075	1011	930.8	926.9	962.5	910.6	40- 50	807.9	2700	49.2, 49.2
60	672.9	837.3	921.2	844.4	694.2	745.7	799.7	725.5	50- 60	781.9	2482	63.5, 63.5
70	418.2	647.1	742.7	652.6	435.5	552.9	619.1	544.0	60- 70	672.5	4155	75.8, 75.8
80	162.9	448.7	562.4	460.1	178.2	360.1	442.4	354.1	70- 80	502.2	4659	85, 85
90	24.11	294.2	414.8	305.2	30.26	226.7	314.4	222.4	80- 90	322.0	4981	90.9, 90.9
100	16.99	211.2	325.7	214.8	21.08	161.4	246.2	156.8	90-100	217.7	5198	94.8, 94.8
110	10.57	133.7	238.5	135.7	12.25	101.2	179.6	97.02	100-110	145.6	5344	97.5, 97.5
120	5.526	58.02	156.5	60.67	6.849	49.14	116.7	41.04	110-120	84.57	5428	99, 99
130	2.212	17.78	70.09	18.04	2.670	12.79	49.98	11.32	120-130	37.20	5466	99.7, 99.7
140	1.456	4.241	20.88	4.219	1.670	4.171	14.78	4.078	130-140	11.24	5477	99.9, 99.9
150	1.284	2.415	4.460	2.475	1.776	2.457	4.457	2.390	140-150	2.624	5480	100, 100
160	1.451	2.677	2.264	2.696	1.834	2.567	2.244	2.606	150-160	1.250	5481	100, 100
170	1.426	2.020	2.245	1.928	1.745	1.905	2.267	2.000	160-170	0.6454	5482	100, 100
180	1.614	1.580	1.492	1.566	1.617	1.578	1.492	1.564	170-180	0.1688	5482	100, 100
DEG	LUMINOUS INTENSITY:cd Less than 25% Percent = 19.7 %										UNIT:lm	



Equipment List:

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2016-12-03	2017-12-02
NTC-F01-006	2.0 meter Integrating Sphere	2016-12-03	2017-12-02
NTC-F01-013	Standard Lamp	2016-12-27	2017-12-26
NTC-F01-031	Digital Power Meter	2016-12-05	2017-12-04
NTC-F01-019	Temperature & Humidity Meter	2016-11-28	2017-11-27



NVLAP LAB CODE 600150-0

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Report Version: V1.1

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