

## 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 Wall Luminaire

Model name(s):

533011##

Representative (Tested) Model:

53301111

**Model Difference: ##=11-30 intends CCT 3000K, 4000K and 5000K.  
(The product is color tunable luminaire, tunable from 3000K, 4000K  
and 5000K).**

Prepare By:



Engineer: Leo Liu

Date: 2017-08-12

Review By:



Technical Lead: Vincent Yuan

Date: 2017-08-15

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:	533011## (##=11-30)
Product type:	Outdoor Wall Luminaire
Rating Input:	AC120V, 60Hz, 40W
Declared CCT:	3000K, 4000K, 5000K
Declared Light output:	3500 lm
LED Manufacturer:	Samsung
LED Model:	SPMWH1229A
LED Quantity:	63 pcs
Forward current of LED	100mA
Date of Receipt Samples:	2017-07-13
Quantity of Receipt	3
Sample Number:	170713002-S1

**Laboratory Information:**

Test Laboratory:	Dongguan New Testing Centre Co., Ltd
Laboratory Address:	3F, No. 1 the 1 <sup>st</sup> 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:	2017-08-15
Revised Date of Test Report:	N/A
Test Report No.:	NTCR17070066
Remark (If applicable)	N/A

<b>Test Specifications:</b>	
Date of Test	2017-08-11
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

<b>Test Methods</b>
<p><b>1. Photometric and Electrical measurements – Light Distribution Method:</b></p> <p>Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at <math>25^{\circ}\text{C} \pm 1^{\circ}\text{C}</math>, 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 <math>1^{\circ}</math> vertical intervals and <math>22.5^{\circ}</math> Vertical intervals.</p>
<p><b>2. Photometric and Electrical Measurements – Integrating Sphere Method:</b></p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at <math>25^{\circ}\text{C} \pm 1^{\circ}\text{C}</math>. 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
25.0 °C	42 %	Face Down	90 min	25 min

**Electrical Data:**

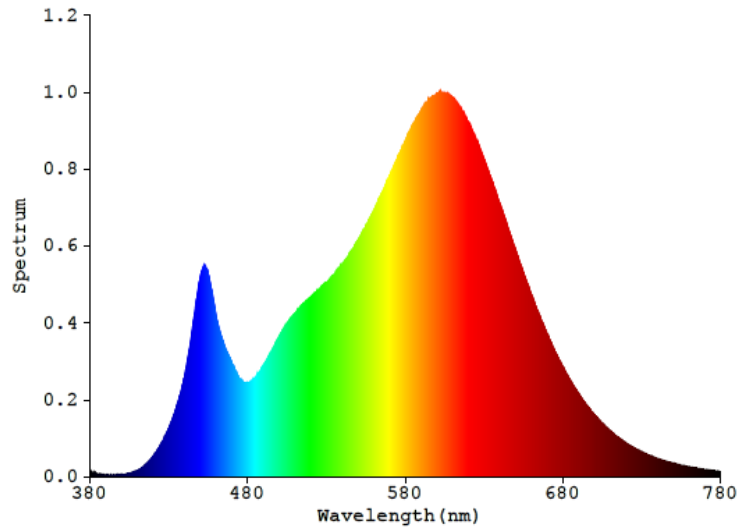
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.3368	39.58	0.9795

**Color Data:**

Parameter	Result
CCT (K)	3107
Color Rendering Index (CRI)	83.9
R9	12
Chromaticity, x	0.4269
Chromaticity, y	0.3957
Chromaticity u'	0.2477
Chromaticity v'	0.5165
Duv	-0.00195

Special Color Rendering			
R1	83	R9	12
R2	93	R10	84
R3	95	R11	81
R4	82	R12	78
R5	84	R13	85
R6	92	R14	98
R7	83	R15	76
R8	61	-	-

**Spectrum Diagram:**



**Goniophotometer Test Results:**

**Test Condition:**

Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
25.0 °C	42 %	Face Down	90 min	25 min

**Electrical Data:**

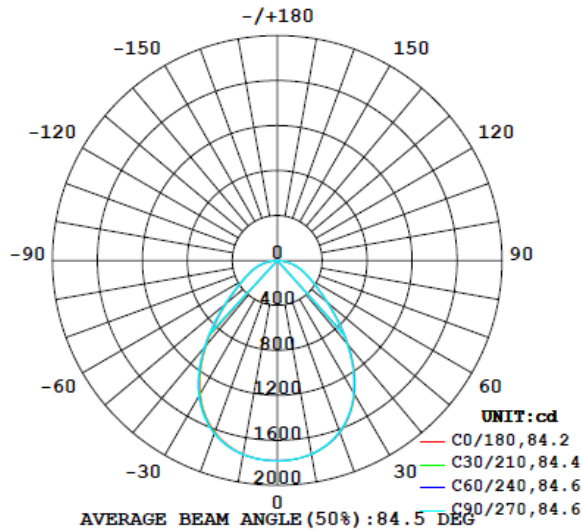
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.3368	39.58	0.9793

**Goniophotometer Data:**

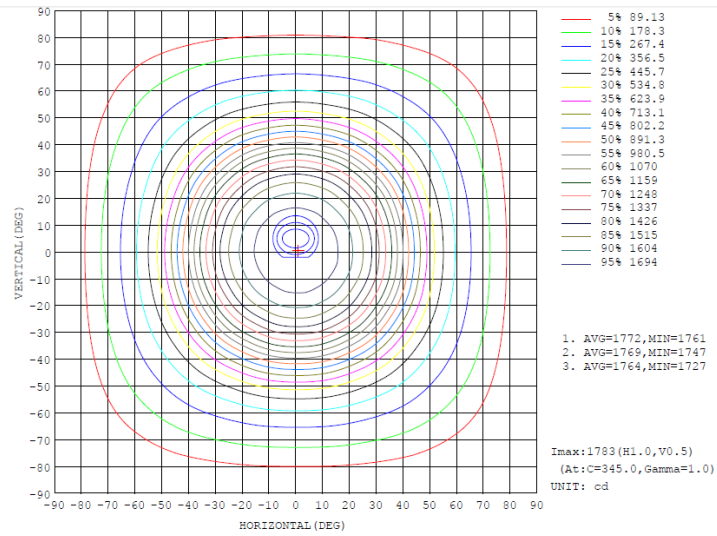
Parameter	Result
Total Luminous (lm)	3555.9
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	89.85
Zonal Lumens Distribution (0-85°)	99.2%
Zonal Lumens Distribution (90-180°)	0%
Beam Angle (°)	84.5
Center Beam Candle Power (cd)	1783

**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	◆ zone	◆ total	lum, lamp
10	1751	1749	1746	1745	1747	1751	1754	1752	0- 10	168.6	168.6	4.74,4.74
20	1628	1625	1618	1617	1624	1633	1640	1633	10- 20	479.4	648.0	18.2,18.2
30	1375	1371	1358	1357	1370	1380	1397	1385	20- 30	696.7	1345	37.8,37.8
40	982.6	980.5	963.8	964.9	980.3	993.9	1014	997.6	30- 40	741.4	2086	58.7,58.7
50	589.3	589.4	575.9	577.3	586.7	588.7	614.2	600.3	40- 50	599.3	2685	75.5,75.5
60	347.4	349.8	343.4	343.6	346.1	353.5	362.1	354.6	50- 60	408.1	3093	87,87
70	210.1	215.0	212.4	211.1	209.7	216.9	224.2	217.8	60- 70	275.4	3369	94.7,94.7
80	66.91	85.88	88.61	80.98	67.15	89.15	100.5	89.02	70- 80	159.9	3529	99.2,99.2
90	0.0058	0.0019	0.0038	0.0017	0.0053	0.0130	0.0050	0.0057	80- 90	27.05	3556	100,100
100	0.0019	0.0123	0.0025	0.0050	0.0025	0.0025	0.0022	0.0022	90-100	0.0030	3556	100,100
110	0.0019	0.0047	0.0025	0.0041	0.0035	0.0025	0.0028	0.0022	100-110	0.0033	3556	100,100
120	0.0025	0.0054	0.0025	0.0047	0.0035	0.0028	0.0038	0.0031	110-120	0.0033	3556	100,100
130	0.0032	0.0063	0.0038	0.0060	0.0057	0.0054	0.0054	0.0057	120-130	0.0037	3556	100,100
140	0.0054	0.0066	0.0066	0.0066	0.0057	0.0069	0.0066	0.0060	130-140	0.0044	3556	100,100
150	0.0066	0.0063	0.0066	0.0070	0.0073	0.0073	0.0066	0.0066	140-150	0.0040	3556	100,100
160	0.0063	0.0063	0.0073	0.0063	0.0070	0.0073	0.0063	0.0066	150-160	0.0032	3556	100,100
170	0.0063	0.0051	0.0057	0.0057	0.0073	0.0060	0.0063	0.0066	160-170	0.0018	3556	100,100
180	0.0016	0.0022	0.0025	0.0025	0.0013	0.0035	0.0025	0.0028	170-180	0.0005	3556	100,100
DEG	LUMINOUS INTENSITY:cd								Less than 35% Percent = 10.5 %		UNIT:lm	

**Luminous Distribution Intensity Data:**

Table--1 UNIT: cd

C (DEG) y (DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	1782	1782	1782	1781	1781	1781	1781	1781	1783	1780	1783	1783	1782	1782	1782	1781	1781	1781	1781
5	1775	1776	1775	1773	1773	1774	1773	1772	1772	1772	1772	1772	1773	1773	1776	1774	1775	1775	1775
10	1751	1752	1750	1749	1749	1748	1746	1746	1744	1745	1745	1747	1747	1749	1752	1751	1754	1753	1754
15	1704	1707	1702	1701	1699	1701	1697	1696	1693	1695	1695	1697	1700	1700	1706	1706	1710	1709	1711
20	1628	1632	1626	1625	1623	1624	1618	1618	1613	1617	1616	1620	1624	1623	1632	1633	1638	1638	1640
25	1520	1524	1516	1517	1512	1514	1507	1508	1500	1504	1503	1509	1516	1514	1524	1525	1533	1532	1537
30	1375	1379	1369	1371	1364	1367	1358	1359	1350	1357	1354	1363	1370	1368	1380	1380	1391	1390	1397
35	1192	1198	1186	1187	1179	1182	1173	1175	1165	1173	1170	1181	1189	1185	1202	1201	1214	1212	1220
40	983	990	977	980	971	973	964	966	957	965	962	972	980	977	995	994	1008	1006	1014
45	772	779	767	771	763	765	756	759	751	757	753	763	771	767	784	785	797	795	803
50	589	594	585	589	582	584	576	579	573	577	574	580	587	584	597	599	609	608	614
55	448	452	446	449	444	446	440	442	437	441	437	442	446	444	454	455	463	462	468
60	347	351	347	350	346	347	343	345	341	344	340	343	346	345	352	353	359	359	362
65	273	276	274	276	274	275	272	274	271	272	269	270	272	271	278	279	284	283	286
70	210	213	211	215	213	215	212	214	211	211	207	208	210	209	215	217	222	222	224
75	144	148	149	154	154	155	153	154	151	150	145	143	145	145	153	156	162	162	164
80	66.9	72.5	75.1	85.9	88.8	91.1	88.6	89.8	85.9	81.0	69.5	66.2	67.2	68.2	81.4	89.2	97.3	98.2	101
85	6.12	2.19	8.15	14.6	16.5	22.3	18.4	21.1	13.1	6.71	4.54	1.45	1.59	4.33	6.60	14.0	27.7	27.3	31.1
90	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.01	0.01
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00
130	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00
135	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01
140	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01
145	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
150	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
155	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
160	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
165	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
170	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
175	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table--2 UNIT: cd

C (DEG) y (DEG)	285	300	315	330	345														
0	1781	1783	1780	1783	1783														
5	1774	1775	1776	1776	1775														
10	1753	1754	1752	1753	1752														
15	1709	1710	1706	1709	1705														
20	1637	1639	1633	1635	1630														
25	1533	1535	1527	1529	1524														
30	1391	1393	1385	1387	1379														
35	1213	1215	1205	1208	1198														
40	1006	1009	998	1000	989														
45	795	798	786	789	778														
50	607	610	600	602	593														
55	462	464	456	457	451														
60	359	360	355	355	350														
65	283	285	280	280	275														
70	222	223	218	217	212														
75	162	162	157	155	148														
80	98.7	98.2	89.0	81.8	71.2														
85	27.8	27.5	12.8	5.60	4.56														
90	0.01	0.01	0.01	0.00	0.01														
95	0.00	0.00	0.00	0.00	0.00														
100	0.00	0.00	0.00	0.00	0.00														
105	0.00	0.00	0.00	0.00	0.00														
110	0.00	0.00	0.00	0.00	0.00														
115	0.00	0.00	0.00	0.00	0.00														
120	0.00	0.01	0.00	0.00	0.00														
125	0.00	0.01	0.00	0.00	0.01	0.00													
130	0.00	0.01	0.01	0.01	0.00														
135	0.01	0.01	0.01	0.01	0.01	0.01													
140	0.01	0.01	0.01	0.01	0.01														
145	0.01	0.01	0.01	0.01	0.01														
150	0.01	0.01	0.01	0.01	0.01														
155	0.01	0.01	0.01	0.01	0.01														
160	0.01	0.01	0.01	0.01	0.01														
165	0.01	0.01	0.01	0.01	0.01														
170	0.01	0.01	0.01	0.01	0.01														
175	0.01	0.01	0.01	0.01	0.01														
180	0.00	0.00	0.00	0.00	0.00														





**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

Report No: NTCR17070066  
Report Version: V1.1

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