

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

Wall Pack Luminaire

Model name(s):

533051##

Representative (Tested) Model:

53305161

Model Difference: ## =61-70 intends CCT is 5000K.

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:	533051## (##=61-70)
Product type:	Outdoor Non-Cutoff and Semi-Cutoff Wall-Mounted Area Luminaires
Rating Input:	AC120-277V, 50/ 60Hz, 20W
Declared CCT:	5000K
Declared Light output:	2000 lm
LED Manufacturer:	Samsung
LED Model:	SPMWH1228
LED Quantity:	54 pcs
Forward current of LED	120mA
LED Driver Model:	SS-25H
Date of Receipt Samples:	2017-07-05
Quantity of Receipt	1
Sample Number:	170705001-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:	2017-07-31
Revised Date of Test Report:	N/A
Test Report No.:	NTCR17070055
Remark (If applicable)	N/A

Test Specifications:	
Date of Test	2017-07-10
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
24.6 °C	37 %	Face Down	90 min	25 min

Electrical Data:

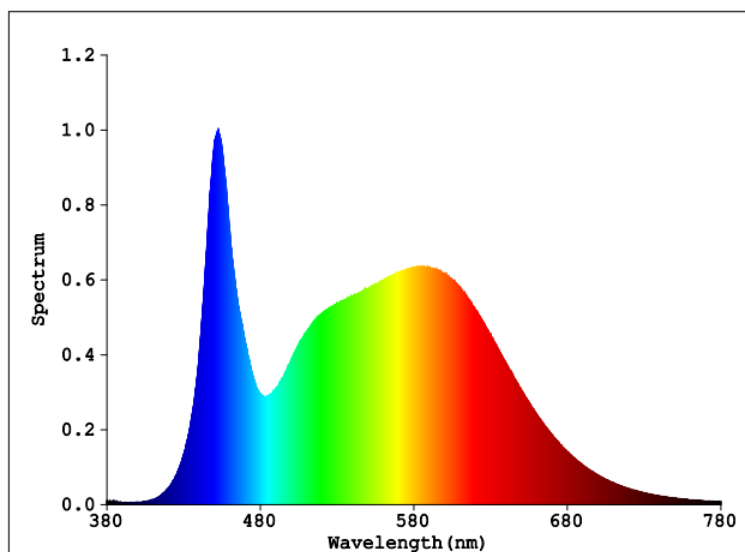
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.1600	19.03	0.9910

Color Data:

Parameter	Result
CCT (K)	5019
Color Rendering Index (CRI)	85.0
R9	15
Chromaticity, x	0.3447
Chromaticity, y	0.3522
Chromaticity u'	0.2109
Chromaticity v'	0.4849
Duv	0.00049

Special Color Rendering			
R1	84	R9	15
R2	91	R10	77
R3	94	R11	83
R4	84	R12	65
R5	84	R13	86
R6	86	R14	97
R7	87	R15	79
R8	69	-	-

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:

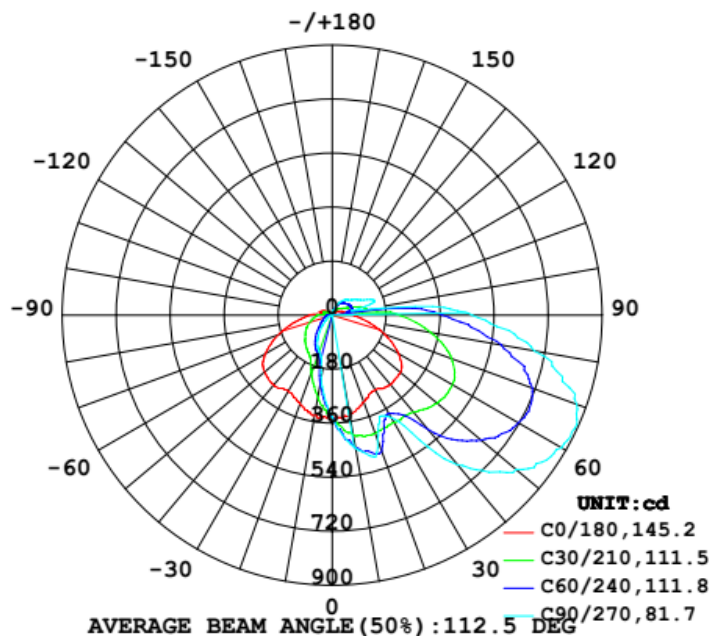
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.1600	19.03	0.9910

Goniophotometer Data:

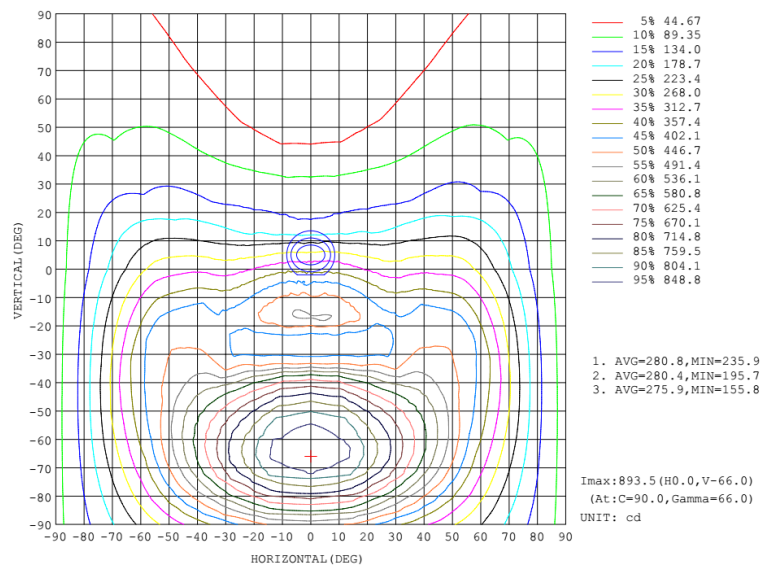
Parameter	Result
Total Luminous (lm)	2102
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	110.44
Zonal Lumens (0-90°) (lm)	1837
Zonal Luminous Efficacy(0-90°) (lm/w)	96.53
Zonal Lumens Distribution (80-90°)	10.7%
Beam Angle (°)	112.5
Center Beam Candle Power (cd)	893.5

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	337.9	426.3	451.0	429.4	339.5	251.5	213.1	255.3	0~ 10	32.70	32.70	1.56,1.56
20	308.5	458.7	441.9	461.9	313.4	154.6	128.4	157.1	10~ 20	91.51	124.2	5.91,5.91
30	288.4	388.9	393.9	398.1	292.2	131.1	98.74	131.7	20~ 30	130.6	254.8	12.1,12.1
40	301.5	399.7	651.3	400.5	303.6	107.3	59.01	107.8	30~ 40	175.3	430.1	20.5,20.5
50	297.4	523.7	800.2	518.7	294.6	85.35	30.44	86.65	40~ 50	246.4	676.4	32.2,32.2
60	254.8	584.9	883.3	585.3	256.9	68.24	16.08	70.01	50~ 60	306.1	982.5	46.7,46.7
70	185.8	570.2	867.0	573.2	190.8	54.27	6.737	56.14	60~ 70	329.7	1312	62.4,62.4
80	116.2	456.3	683.3	473.7	122.8	42.56	2.574	44.07	70~ 80	301.0	1613	76.8,76.8
90	70.95	296.3	467.0	311.7	75.77	33.82	2.214	34.80	80~ 90	224.2	1837	87.4,87.4
100	37.06	54.75	99.23	83.50	40.19	15.72	2.169	16.02	90~100	112.6	1950	92.8,92.8
110	37.28	71.44	148.4	70.47	39.11	18.08	2.302	18.10	100~110	49.76	2000	95.1,95.1
120	27.73	55.12	102.9	56.00	28.49	12.15	1.221	12.70	110~120	39.86	2040	97,97
130	6.255	46.96	79.37	47.66	5.149	6.432	1.575	6.581	120~130	26.45	2066	98.3,98.3
140	4.068	40.43	68.15	40.81	4.330	3.197	0.9676	3.136	130~140	18.31	2084	99.2,99.2
150	1.928	29.84	49.37	29.59	2.197	0.4968	0.3763	0.4439	140~150	11.13	2096	99.7,99.7
160	0.6061	12.43	30.14	8.598	0.6540	0.9934	0.2451	0.0971	150~160	4.976	2101	99.9,99.9
170	0.5226	9.312	12.48	1.804	0.1368	0.9319	0.0782	1.264	160~170	1.237	2102	100,100
180	0.0305	0.0210	0.0228	0.0613	0.0305	0.0210	0.0213	0.0615	170~180	0.1584	2102	100,100
DEG	LUMINOUS INTENSITY:cd Less than 35% Percent = 14.1 %									UNIT:lm		

Luminous Distribution Intensity Data:

C (DEG)		UNIT: cd																		
γ (DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	
0	331	341	336	339	337	337	338	336	341	337	344	338	331	341	336	339	337	337	338	
5	342	364	375	390	396	411	401	394	406	382	382	360	341	323	316	297	292	280	281	
10	338	376	405	426	450	448	451	459	438	429	404	378	339	306	277	251	235	213	213	
15	323	376	419	450	469	476	486	493	483	456	419	379	328	278	238	200	163	147	145	
20	308	368	420	459	483	477	442	465	485	462	424	374	313	255	205	155	138	130	128	
25	291	358	415	442	409	393	373	392	411	447	422	371	303	240	169	141	128	118	116	
30	288	361	413	389	379	392	394	393	380	398	421	367	292	225	153	131	115	102	98.7	
35	298	376	413	377	405	466	509	466	407	380	418	384	297	215	145	119	99.3	82.2	79.3	
40	301	400	422	400	497	616	651	617	494	400	423	405	304	204	136	107	83.2	62.5	59.0	
45	299	413	442	445	590	696	741	698	591	442	439	414	301	194	127	95.6	67.3	45.0	41.8	
50	297	424	457	524	648	768	800	770	654	519	455	424	295	179	118	85.4	54.5	33.7	30.4	
55	283	430	464	567	689	813	854	817	694	562	464	430	283	162	109	76.0	45.6	25.3	22.3	
60	255	412	463	585	717	837	883	838	723	585	463	411	257	143	102	68.2	38.7	19.0	16.1	
65	222	378	451	587	726	851	892	854	736	593	451	380	225	124	92.6	60.9	33.0	13.7	10.9	
70	186	338	423	570	711	830	867	834	723	573	429	340	191	106	83.1	54.3	28.3	9.38	6.74	
75	149	289	384	525	664	752	795	757	671	536	392	295	156	91.2	73.4	48.0	24.2	6.10	3.62	
80	116	236	335	456	572	666	683	681	584	474	343	243	123	77.6	64.2	42.6	21.5	4.81	2.57	
85	89.4	183	281	374	465	571	593	574	486	395	290	192	95.3	66.3	56.2	38.2	19.8	4.40	2.38	
90	71.0	141	225	296	367	441	467	449	384	312	233	147	75.8	57.4	48.7	33.8	17.9	3.87	2.21	
95	34.6	63.2	99.6	202	269	334	337	323	245	166	89.5	36.9	34.5	26.2	23.2	23.5	14.5	3.64	2.25	
100	37.1	49.4	114	54.7	82.6	102	99.2	89.7	64.5	83.5	126	53.3	40.2	9.36	27.8	15.7	8.66	2.93	2.17	
105	41.9	45.5	105	101	58.4	96.1	114	104	64.7	100	109	47.4	44.4	7.92	31.8	18.5	8.93	2.49	2.51	
110	37.3	36.1	80.9	71.4	71.1	121	148	126	72.8	70.5	79.8	36.5	39.1	6.59	27.9	18.1	7.90	2.03	2.30	
115	32.6	28.0	59.2	64.4	67.6	104	122	107	72.5	64.3	58.7	27.6	33.7	6.55	23.3	15.5	6.17	1.82	2.09	
120	27.7	22.6	47.5	55.1	68.8	91.3	103	93.4	71.1	56.0	47.2	21.5	28.5	6.63	18.8	12.2	4.80	0.95	1.22	
125	16.0	16.4	40.1	49.5	63.5	82.8	91.1	84.1	65.0	51.6	40.1	16.0	17.1	5.76	14.5	8.82	3.89	1.27	1.21	
130	6.25	6.57	34.8	47.0	59.4	75.8	79.4	76.4	60.1	47.7	35.1	6.80	5.15	6.62	10.7	6.43	2.67	1.08	1.58	
135	5.39	12.2	31.7	44.5	57.5	73.2	72.9	72.6	57.2	44.9	28.7	15.7	5.43	8.49	7.92	4.62	1.94	0.82	1.04	
140	4.07	14.1	27.0	40.4	53.2	69.6	68.1	68.9	53.2	40.8	25.4	16.8	4.33	8.07	5.44	3.20	1.01	0.73	0.97	
145	0.25	7.66	13.7	35.5	47.8	60.7	59.1	60.7	47.8	35.4	13.7	9.79	1.69	1.27	1.95	2.02	0.80	0.42	0.62	
150	1.93	9.17	1.20	29.8	42.2	51.1	49.4	51.3	41.9	29.6	1.18	11.5	2.20	3.70	1.08	0.50	0.93	0.28	0.38	
155	0.98	4.13	9.74	4.73	35.7	41.3	39.7	41.5	35.7	5.53	15.6	7.42	1.12	1.71	0.64	0.85	0.25	0.21	0.32	
160	0.61	3.60	7.91	12.4	4.83	19.7	30.1	19.8	5.36	8.60	13.0	5.51	0.65	0.79	0.63	0.99	0.90	0.16	0.25	
165	0.04	1.43	8.73	17.0	20.0	13.4	4.07	8.54	11.6	9.19	6.47	3.23	0.89	0.80	1.31	1.83	1.12	0.04	0.05	
170	0.52	2.24	5.76	9.31	11.4	12.7	12.5	9.01	4.32	1.80	3.86	2.28	0.14	1.21	1.29	0.93	0.07	0.08	0.08	
175	0.17	0.46	0.68	1.39	2.29	2.81	2.65	2.11	1.55	0.85	0.22	0.15	0.05	0.03	0.03	0.03	0.04	0.05	0.04	
180	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.03	0.04	0.06	0.08	0.07	0.03	0.03	0.02	0.02	0.02	0.02	0.02	

Table--2

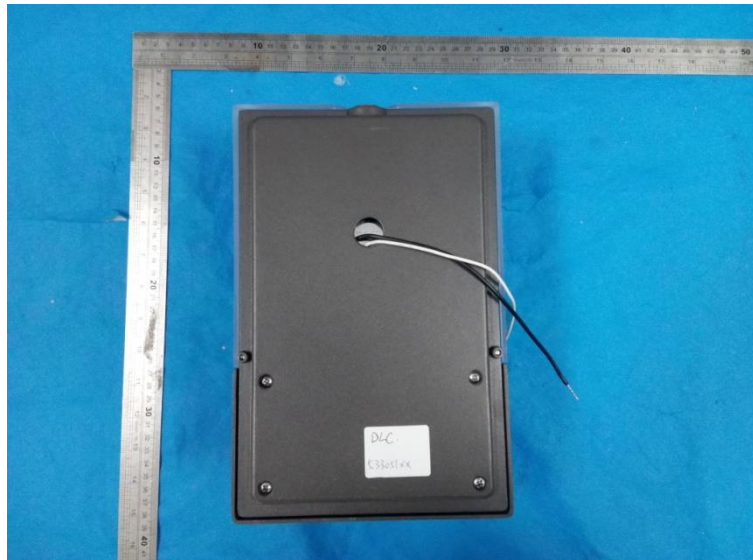
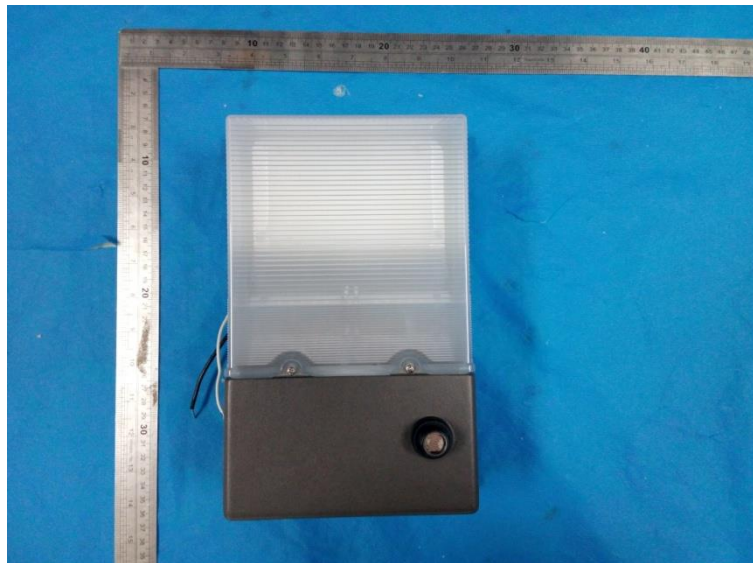
UNIT: cd

C (DEG)	285	300	315	330	345														
γ (DEG)	0	336	341	337	344	338													
5	284	291	300	316	334														
10	214	238	255	279	315														
15	149	167	201	244	283														
20	130	139	157	209	258														
25	118	128	142	174	241														
30	102	116	132	155	228														
35	83.2	100	120	146	220														
40	63.5	84.8	108	137	210														
45	46.8	68.8	96.7	128	200														
50	36.3	56.6	86.7	119	186														
55	26.8	47.4	78.1	111	169														
60	20.4	40.4	70.0	103	148														
65	15.0	34.8	63.0	93.6	127														
70	10.6	30.1	56.1	83.7	108														
75	7.28	26.0	49.6	73.6	91.4														
80	5.96	23.2	44.1	64.4	77.2														
85	5.44	21.2	39.4	56.3	65.7														
90	4.77	19.0	34.8	48.7	56.7														
95	4.34	15.6	24.5	24.2	31.7														
100	3.22	9.20	16.0	27.4	14.1														
105	2.63	9.58	18.7	31.2	13.6														
110	2.12	8.35	18.1	28.3	12.1														
115	1.86	6.45	16.0	23.6	10.3														
120	0.95	5.24	12.7	19.2	8.23														
125	1.19	4.07	9.09	14.9	4.05														
130	1.02	2.73	6.58	10.8	9.42														
135	0.82	1.78	4.69	7.91	10.2														
140	0.90	0.94	3.14	5.07	7.91														
145	0.76	0.75	1.86	1.54	1.07														
150	0.34	0.90	0.44	1.18	3.40														
155	0.29	0.26	0.73	0.60	1.53														
160	0.29	1.06	0.10	0.38	0.58														
165	0.14	1.28	1.06	0.45	0.09														
170	0.18	0.44	1.26	1.47	0.72														
175	0.04	0.08	0.08	0.14	0.19														
180	0.03	0.04	0.06	0.08	0.06														

THD and PF Measurement Test Result:

Electrical Measurement:

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	iTHD
277.0	60	0.0793	19.63	0.8943	11.02



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

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