

## 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

Model name(s):

533031xx

Representative (Tested) Model:

53303161

**Model Difference: XX=61-70 intends CCT is 5000K**

Prepare By:



Engineer: Leo Liu

Date: 2017-06-22

Review By:



Technical Lead: Vincent Yuan

Date: 2017-06-22

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:	53303161
Product type:	Outdoor Non-Cutoff and Semi-Cutoff Wall-Mounted Area Luminaires
Rating Input:	AC120-277V, 50/ 60Hz, 90W
Declared CCT:	5000K
Declared Light Output:	10000lm
LED Manufacturer:	Samsung
LED Model:	2835 Series
LED Quantity:	182 pcs
Forward current of LED Chip:	200mA
Date of Receipt Samples:	2017-06-14
Quantity of Receipt Samples:	1
Sample Number:	170614008-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:	2017-06-22
Revised Date of Test Report:	N/A
Test Report No.:	NTCR17060043
Remark (If applicable)	N/A

Test Specifications:	
Date of Test	2017-06-19
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><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>
<p><b>3. THD and PF measurements</b></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
24.8	51	Face Down	90	25

## Electrical Data:

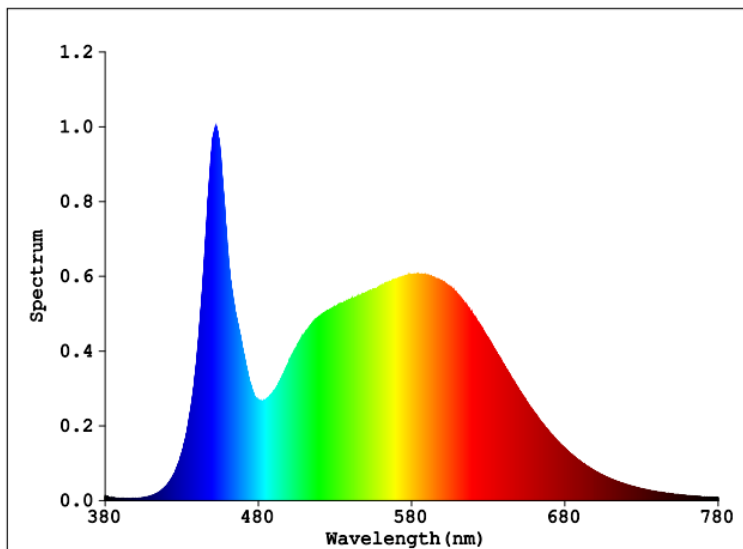
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.7297	87.31	0.9970

## Color Data:

Parameter	Result
CCT (K)	5016
Color Rendering Index (CRI)	84.8
R9	16
Chromaticity, x	0.3448
Chromaticity, y	0.3533
Chromaticity u'	0.2106
Chromaticity v'	0.4855
Duv	0.00098

Special Color Rendering			
R1	83	R9	16
R2	90	R10	76
R3	94	R11	84
R4	84	R12	64
R5	84	R13	85
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	51	Face Down	90	25

**Electrical Data:**

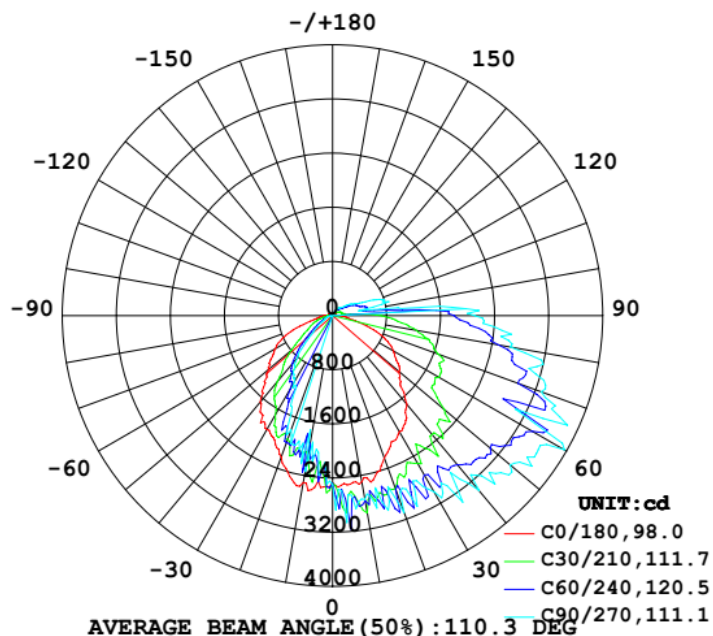
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.7272	87.01	0.9970

**Goniophotometer Data:**

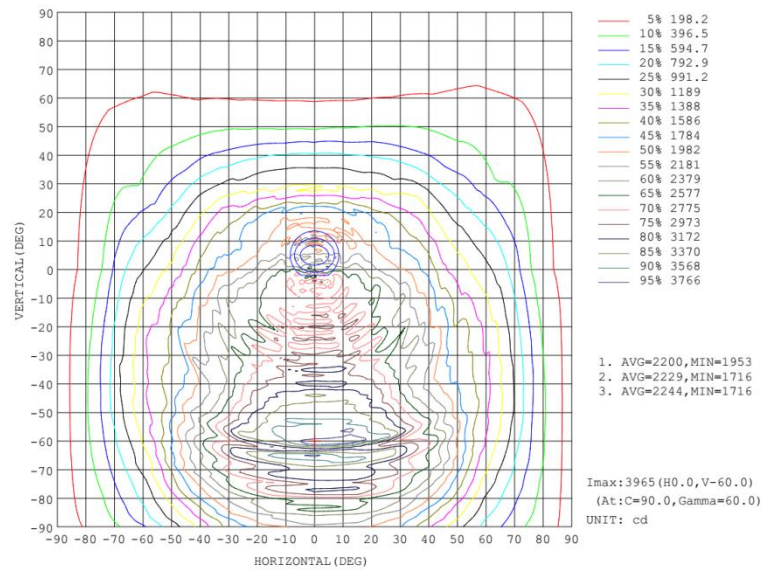
Parameter	Result
Total Luminous (lm)	10010
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	115.04
Zonal Lumens (0-90°) (lm)	9167
Zonal Luminous Efficacy(0-90°) (lm/w)	105.4
Zonal Lumens Distribution (80-90°)	9.56
Beam Angle (°)	110.3

**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	zone	total	%lum, lamp
10	2494	2870	2757	2659	2501	2177	2341	1979	0- 10	237.5	237.5	2.37, 2.37
20	2240	2652	3101	2622	2224	1956	1796	1969	10- 20	677.7	915.2	9.14, 9.14
30	1978	2557	3005	2479	1946	1588	1140	1501	20- 30	1011	1926	19.2, 19.2
40	1711	2440	3371	2506	1668	997.8	804.0	1044	30- 40	1222	3147	31.4, 31.4
50	1281	2366	3432	2293	1223	627.3	364.4	668.8	40- 50	1328	4475	44.7, 44.7
60	1041	2551	3965	2399	982.3	338.8	175.9	371.8	50- 60	1358	5833	58.3, 58.3
70	687.3	2531	3288	2321	625.9	156.1	98.82	181.0	60- 70	1341	7174	71.7, 71.7
80	247.4	1972	2672	1781	230.0	64.87	41.19	74.68	70- 80	1161	8335	83.3, 83.3
90	120.6	1225	2105	1066	123.8	27.69	6.554	30.67	80- 90	831.6	9167	91.6, 91.6
100	55.13	249.4	437.3	198.6	60.47	21.06	12.70	21.75	90-100	390.9	9558	95.5, 95.5
110	60.91	229.9	685.0	199.0	55.43	13.43	12.98	14.39	100-110	178.0	9736	97.3, 97.3
120	44.75	182.3	344.7	165.2	46.40	13.69	11.15	14.66	110-120	129.8	9865	98.6, 98.6
130	24.98	115.7	198.2	106.6	26.44	8.661	7.312	9.554	120-130	73.28	9939	99.3, 99.3
140	10.42	96.05	149.0	90.45	11.43	5.142	5.222	6.003	130-140	40.07	9979	99.7, 99.7
150	5.375	38.22	82.07	35.34	5.688	4.297	4.724	4.709	140-150	22.18	10001	99.9, 99.9
160	4.583	6.659	25.47	7.448	4.631	3.902	4.095	4.578	150-160	6.714	10008	100, 100
170	4.729	4.680	5.256	5.052	4.763	4.109	4.695	4.814	160-170	1.629	10009	100, 100
180	4.922	5.070	5.103	5.052	4.795	4.810	4.914	4.989	170-180	0.4619	10010	100, 100
DEG	LUMINOUS INTENSITY:cd Less than 25% Percent = 8.7 %									UNIT:lm		

**Luminous Distribution Intensity Data:**

Table--1

UNIT: cd

C (DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
γ (DEG)	2469	2462	2473	2481	2476	2491	2497	2478	2473	2468	2476	2462	2469	2462	2473	2481	2476	2491	2497
0	2469	2462	2473	2481	2476	2491	2497	2478	2473	2468	2476	2462	2469	2462	2473	2481	2476	2491	2497
5	2509	2603	2660	2656	3168	2770	2653	2744	2950	2626	2587	2695	2453	2240	2162	2449	2468	2380	2369
10	2494	2701	2958	2870	2780	2919	2757	2771	2687	2659	2872	2712	2501	2216	2120	2177	1914	2390	2341
15	2452	2724	2708	2623	2953	2604	2856	2571	2795	2635	2595	2675	2460	2155	2022	2005	2128	1993	1916
20	2240	2499	2720	2652	2730	2991	3101	2867	2733	2622	2654	2478	2224	2047	1944	1956	2001	1776	1796
25	2059	2535	2578	2606	2674	3043	2913	3098	2575	2479	2526	2448	2032	1804	1958	1892	1736	1483	1472
30	1978	2319	2516	2557	2718	3093	3005	3006	2628	2479	2493	2319	1946	1677	1699	1588	1257	1239	1140
35	1890	2152	2393	2481	2707	3212	3363	3009	2690	2578	2256	2216	1799	1610	1506	1195	1057	1032	1021
40	1711	2059	2292	2440	2877	3172	3371	3088	2822	2506	2275	1973	1668	1438	1276	998	926	857	804
45	1417	1780	2221	2422	3000	3330	3277	3290	2894	2456	2225	1776	1411	1186	1022	828	712	603	574
50	1281	1695	2166	2366	3049	3457	3432	3417	2962	2293	2174	1683	1223	950	801	627	494	394	364
55	1153	1662	1803	2407	3233	3552	3645	3483	3121	2273	1749	1546	1119	749	575	476	344	275	261
60	1041	1515	1822	2551	3418	3876	3965	3491	3350	2399	1701	1453	982	568	433	339	241	195	176
65	902	1394	1747	2493	3026	3362	3835	3582	3020	2318	1580	1303	832	407	351	236	167	133	124
70	687	1207	1663	2531	2920	3267	3288	3085	2839	2321	1485	1087	626	324	279	156	114	100	98.8
75	435	1040	1488	2296	2794	2951	3011	2766	2631	2118	1305	931	375	254	200	98.7	77.5	75.9	73.9
80	247	824	1263	1972	2493	2731	2672	2643	2326	1781	1105	707	230	199	134	64.9	48.9	45.7	41.2
85	184	577	970	1564	2179	2528	2520	2428	1975	1384	849	474	174	150	86.6	40.1	19.9	11.9	10.9
90	121	364	722	1225	1802	2050	2105	1905	1673	1066	562	252	124	111	59.5	27.7	10.3	6.51	6.55
95	75.2	114	264	573	1039	1426	1586	1232	799	423	159	89.8	89.9	82.3	45.0	24.5	11.1	7.47	8.23
100	55.1	71.6	184	249	467	453	437	405	472	199	137	67.8	60.5	50.2	29.8	21.1	11.3	12.1	12.7
105	38.8	51.7	131	232	507	750	789	709	451	195	118	47.3	48.2	33.8	16.5	15.0	10.6	12.2	13.6
110	60.9	51.1	142	230	412	649	685	583	360	199	121	55.6	55.4	39.4	27.5	13.4	10.0	12.2	13.0
115	56.0	51.2	131	231	365	438	440	421	330	207	116	56.1	57.2	33.7	23.3	16.4	9.76	12.1	11.6
120	44.7	42.4	106	182	290	332	345	317	267	165	94.2	47.7	46.4	26.6	19.2	13.7	9.05	11.5	11.2
125	33.8	31.6	89.9	145	211	264	281	253	196	133	83.1	37.2	35.8	21.2	14.8	11.2	6.71	10.3	9.88
130	25.0	24.1	72.7	116	169	199	198	191	157	107	68.0	27.3	26.4	16.6	11.9	8.66	6.39	6.92	7.31
135	12.2	11.7	63.9	102	136	167	168	160	127	94.9	60.3	12.1	16.5	10.2	9.06	6.13	5.81	6.74	6.74
140	10.4	13.5	48.8	96.0	126	139	149	135	121	90.4	45.2	11.9	11.4	10.8	6.07	5.14	4.63	5.90	5.22
145	7.55	9.56	25.9	69.7	104	124	131	120	99.3	64.2	25.5	10.8	8.37	8.30	4.67	4.50	4.58	4.68	4.86
150	5.37	4.21	13.1	38.2	63.2	76.9	82.1	74.4	58.8	35.3	13.1	5.77	5.69	5.96	3.85	4.30	4.52	4.66	4.72
155	4.64	4.11	4.05	19.4	35.5	45.2	48.0	43.8	34.6	19.8	6.44	5.57	4.45	4.83	4.59	3.99	4.47	4.64	4.60
160	4.58	4.31	4.08	6.66	16.8	23.1	25.5	23.3	16.7	7.45	5.15	5.36	4.63	4.75	4.70	3.90	4.42	4.61	4.10
165	4.62	4.54	4.13	4.10	4.28	7.92	8.01	6.67	6.08	5.05	5.08	5.15	4.69	4.73	4.81	3.93	4.55	4.53	4.10
170	4.73	4.85	4.31	4.68	4.31	4.87	5.26	5.01	4.88	5.05	5.06	5.15	4.76	4.74	4.92	4.11	4.75	4.65	4.69
175	4.88	4.95	4.57	4.86	4.78	5.14	4.72	5.10	4.91	5.05	5.03	5.10	4.83	4.79	5.04	4.23	4.82	4.76	4.85
180	4.92	4.99	5.03	5.07	5.10	5.19	5.10	5.14	5.04	5.05	5.02	5.07	4.79	4.92	4.96	4.81	4.85	4.93	4.91

Table--2

UNIT: cd

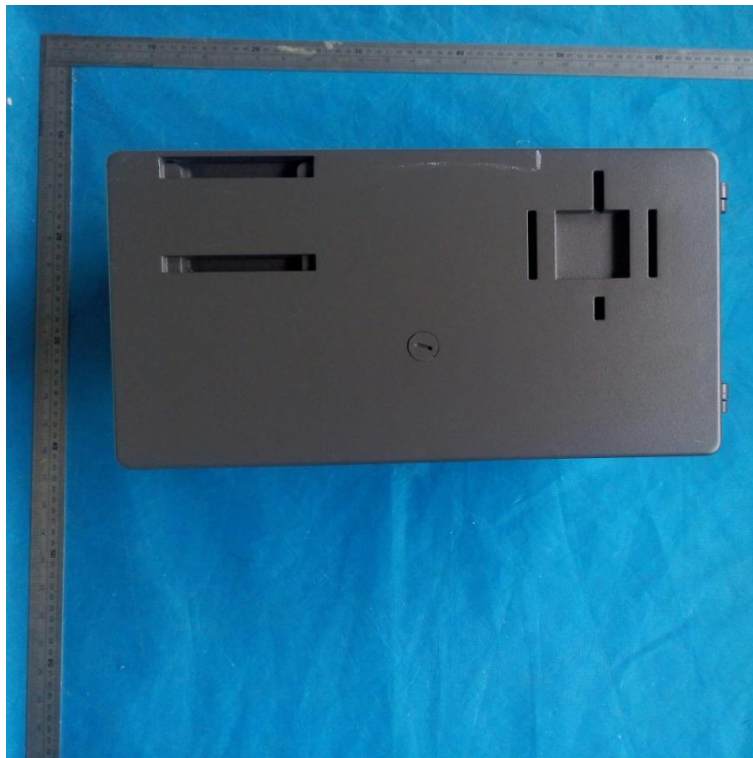
C (DEG)	285	300	315	330	345														
γ (DEG)	2478	2473	2468	2476	2462														
0	2478	2473	2468	2476	2462														
5	2343	2369	2199	2256	2613														
10	2242	2002	1979	2229	2102														
15	1979	1976	1851	1943	2304														
20	1803	2005	1969	1926	2101														
25	1463	1759	1883	1779	1918														
30	1189	1336	1501	1755	1756														
35	1001	1100	1179	1504	1612														
40	876	931	1044	1312	1462														
45	626	735	871	1093	1220														
50	414	535	669	825	1014														
55	282	372	505	615	851														
60	197	259	372	466	660														
65	135	178	266	368	499														
70	97.9	118	181	297	336														
75	74.4	78.6	114	222	273														
80	45.5	50.6	74.7	154	209														
85	12.5	24.3	44.8	103	161														
90	6.28	12.4	30.7	71.3	120														
95	7.08	12.5	25.8	52.5	92.3														
100	11.9	12.9	21.7	33.8	56.9														
105	12.3	12.0	16.7	18.5	38.7														
110	12.3	10.8	14.4	29.4	36.4														
115	12.0	10.6	17.9	24.9	36.6														
120	11.3	9.44	14.7	20.7	29.3														
125	9.73	6.74	12.4	16.0	23.3														
130	6.70	6.17	9.55	13.0	18.0														
135	6.73	5.60	7.39	10.0	12.4														
140	5.83	5.09	6.00	7.17	11.2														
145	4.81	4.96	4.80	4.87	8.67														
150	4.80	4.83	4.71	4.51	6.04														
155	4.78	4.67	4.52	4.60	4.70														
160	4.59	4.55	4.58	4.70	4.74														
165	4.64	4.47	4.70	4.80	4.77														
170	4.85	4.48	4.81	4.90	4.80														
175	4.98	4.83	4.86	5.08	4.88														
180	4.95	4.97	4.99	5.15	5.07														

**THD and PF Measurement Test Result:**

**Electrical Measurement:**

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	iTHD
277.05	60	0.3201	85.01	0.9588	22.07





**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\*\*\*\*\***