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):
533041xx

Representative (Tested) Model:
53304161

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:	53304161
Product type:	Outdoor Non-Cutoff and Semi-Cutoff Wall-Mounted Area Luminaires
Rating Input:	AC120-277V, 50/ 60Hz, 54W
Declared CCT:	5000K
Declared Light Output:	6000lm
LED Manufacturer:	Samsung
LED Model:	2835 Series
LED Quantity:	126 pcs
Forward current of LED Chip:	200mA
Date of Receipt Samples:	2017-06-14
Quantity of Receipt Samples:	1
Sample Number:	170614006-S1

Laboratory Information:

Test Laboratory:	Dongguan New Testing Centre Co., Ltd
Laboratory Address:	3F, No. 1 the 1st 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.:	NTCR17060039
Remark (*If applicable*)	N/A

Test Specifications:	
Date of Test	2017-06-15
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

1. Photometric and Electrical measurements – Light Distribution Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25° C ± 1° 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.

2. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25º C ± 1º 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.

3. THD and PF measurements

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.

Integrating Sphere Test Results

Test Condition:

Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
25.0	42	Face Down	90	25

Electrical Data:

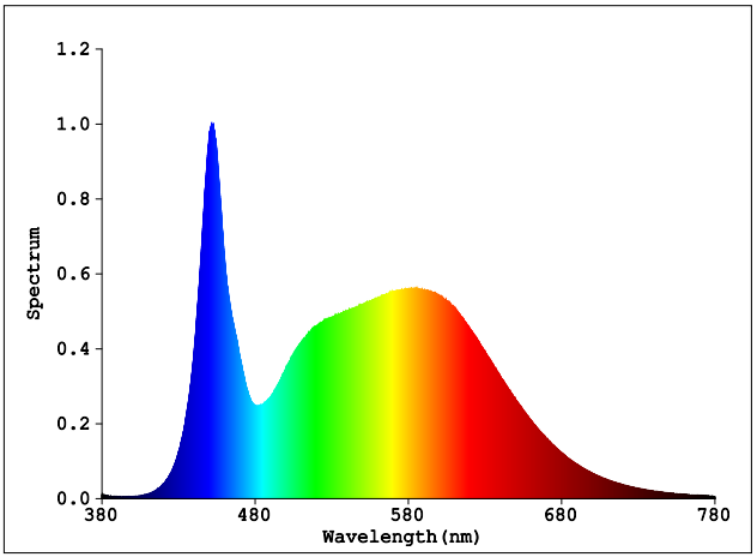
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.4539	53.99	0.9912

Color Data:

Parameter	Result
CCT (K)	5206
Color Rendering Index (CRI)	84.8
R9	16
Chromaticity, x	0.3396
Chromaticity, y	0.3471
Chromaticity u′	0.2094
Chromaticity v′	0.4816
Duv	0.00000

Special Color Rendering			
R1	84	R9	16
R2	90	R10	76
R3	93	R11	84
R4	85	R12	64
R5	84	R13	86
R6	85	R14	96
R7	87	R15	79
R8	70	-	-

Spectrum Diagram:



Goniophotemeter Test Results:

Test Condition:

Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
24.9	42	Face Down	90	25

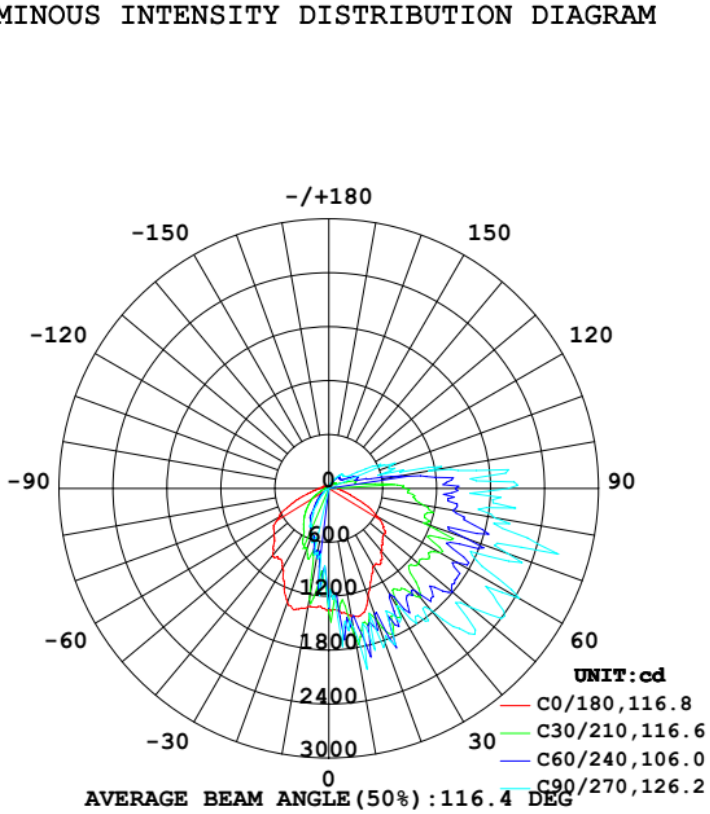
Electrical Data:

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.4539	53.99	0.9912

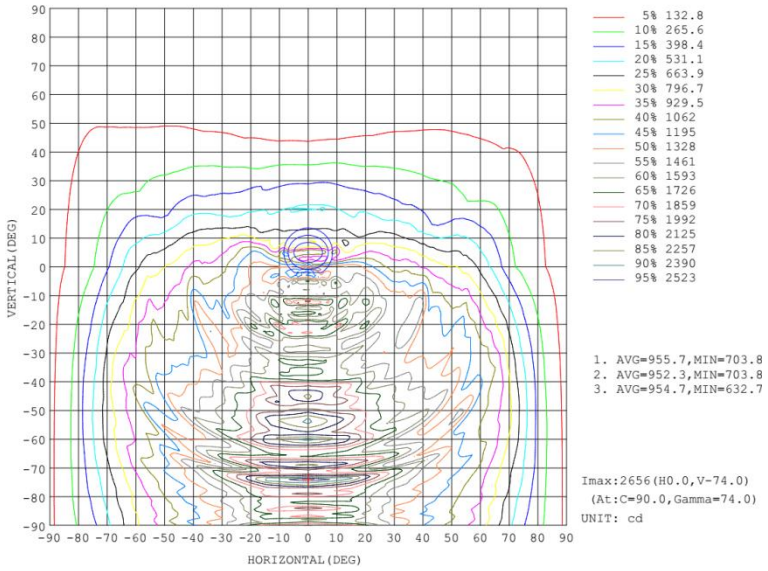
Goniophotometer Data:

Parameter	Result
Total Luminous (lm)	6184.7
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	114.55
Zonal Lumens (0-90°) (lm)	5175
Zonal Luminous Efficacy(0-90°) (lm/w)	95.85
Zonal Lumens Distribution (80-90°)	11.67%
Beam Angle (°)	116.4
Center Beam Candle Power (cd)	2656

Luminous Intensity Distribution Diagram:



Isocandela Diagram:



Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	1439	1480	1564	1443	1336	701.6	720.0	699.2	0- 10	114.5	114.5	1.85,1.85
20	1278	1603	1827	1552	1348	577.6	527.7	578.4	10- 20	334.5	449.0	7.26,7.26
30	996.2	1513	1509	1448	1029	450.5	364.2	456.8	20- 30	502.9	951.9	15.4,15.4
40	908.5	1356	1764	1313	974.4	323.1	183.3	316.8	30- 40	594.8	1547	25,25
50	801.8	1532	2056	1469	792.9	209.0	73.68	204.3	40- 50	702.7	2249	36.4,36.4
60	618.7	1569	2449	1464	640.3	102.6	39.92	104.2	50- 60	778.2	3028	49,49
70	316.0	1365	2116	1381	380.6	38.39	2.953	41.30	60- 70	773.2	3801	61.5,61.5
80	155.6	1246	1868	1170	181.1	15.94	4.144	18.26	70- 80	744.1	4545	73.5,73.5
90	102.0	1094	1998	1071	105.7	9.506	5.214	10.39	80- 90	629.9	5175	83.7,83.7
100	62.19	552.9	1127	433.4	70.08	7.395	9.422	7.546	90-100	504.5	5679	91.8,91.8
110	64.16	291.1	720.4	303.4	70.55	5.598	9.294	5.540	100-110	212.4	5892	95.3,95.3
120	45.95	147.9	370.1	146.6	50.94	4.911	7.785	4.517	110-120	138.6	6030	97.5,97.5
130	26.04	127.7	217.8	126.8	33.74	4.018	4.930	3.647	120-130	67.14	6097	98.6,98.6
140	9.875	121.2	199.1	119.4	11.51	3.103	3.446	2.868	130-140	48.09	6146	99.4,99.4
150	3.650	56.34	106.4	56.50	3.288	2.892	2.968	2.744	140-150	27.58	6173	99.8,99.8
160	3.511	2.488	59.35	2.596	3.561	2.614	2.637	2.668	150-160	9.554	6183	100,100
170	3.543	4.994	6.097	3.850	3.725	2.741	2.899	2.662	160-170	1.697	6184	100,100
180	3.689	2.996	3.077	2.905	3.769	2.868	2.825	2.658	170-180	0.3191	6185	100,100
DEG	LUMINOUS INTENSITY:cd Less than 25% Percent = 10.2 %									UNIT:lm		

Luminous Distribution Intensity Data:

Table--1 UNIT: cd

γ (DEG) \ C(DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	1345	1359	1384	1337	1333	1337	1320	1354	1330	1334	1337	1345	1345	1359	1384	1337	1333	1337	1320
5	1366	1414	1356	1191	1433	1634	1767	1725	1536	1182	1198	1115	1319	1129	921	1038	1109	1183	1199
10	1439	1387	1679	1480	1473	1456	1564	1510	1510	1443	1609	1202	1336	1024	1251	702	786	704	720
15	1442	1407	1540	1629	1767	1535	1606	1552	1742	1609	1417	1271	1391	1168	767	725	632	556	567
20	1278	1590	1562	1603	1489	1861	1827	1917	1480	1552	1436	1377	1348	1203	711	578	587	511	528
25	1121	1454	1700	1469	1562	1686	1504	1722	1622	1412	1459	1249	1169	1016	685	560	486	451	448
30	996	1324	1560	1513	1362	1604	1509	1637	1404	1448	1364	1153	1029	845	553	451	400	378	364
35	1013	1357	1385	1418	1501	1660	1725	1704	1519	1361	1270	1157	955	744	493	392	328	286	285
40	909	1563	1582	1356	1481	1700	1764	1723	1525	1313	1469	1326	974	677	425	323	239	181	183
45	845	1208	1261	1385	1626	1932	2295	2023	1681	1341	1120	1030	861	575	366	260	177	129	113
50	802	1166	1303	1532	1793	1883	2056	1927	1824	1469	1182	1003	793	432	304	209	121	83.0	73.7
55	748	1258	1362	1543	1739	2090	2375	2184	1764	1458	1204	1027	747	336	248	152	75.5	57.8	55.7
60	619	1190	1430	1569	1647	2189	2449	2230	1662	1464	1250	1021	640	300	199	103	44.4	41.4	39.9
65	482	1098	1243	1306	1445	1711	1758	1778	1472	1273	1098	902	515	227	146	67.6	22.3	19.6	16.2
70	316	1066	1117	1365	1628	1950	2116	2079	1790	1381	1091	913	381	183	103	38.4	6.07	4.08	2.95
75	222	889	1110	1355	1773	2295	2425	2412	1841	1373	996	792	256	145	75.9	20.2	3.46	2.96	3.58
80	156	732	1070	1246	1400	1801	1868	1869	1420	1170	1011	648	181	117	56.6	15.9	3.95	3.58	4.14
85	116	554	959	1140	1329	1826	1834	1888	1304	1115	829	496	131	94.1	45.8	13.0	4.08	4.07	4.59
90	102	405	860	1094	1409	1933	1998	1940	1399	1071	780	363	106	81.6	38.6	9.51	4.21	4.70	5.21
95	90.6	229	596	989	1390	1803	1975	1812	1294	873	452	180	99.4	74.8	32.2	8.01	5.31	5.98	7.03
100	62.2	124	290	553	814	1063	1127	1057	741	433	239	114	70.1	50.3	20.5	7.39	6.17	7.59	9.42
105	40.0	77.3	316	221	434	612	565	723	358	213	290	79.9	45.5	30.1	12.4	6.38	6.36	8.15	9.45
110	64.2	68.5	212	291	338	598	720	604	382	303	201	66.2	70.5	40.9	16.0	5.60	6.47	8.17	9.29
115	54.3	56.3	133	211	318	569	639	577	341	210	125	55.4	60.3	32.1	12.3	5.25	6.35	8.16	8.60
120	46.0	49.6	102	148	220	323	370	333	242	147	92.4	48.6	50.9	25.7	9.44	4.91	5.92	7.96	7.78
125	37.8	46.1	97.9	126	169	213	237	223	179	125	89.9	45.9	43.2	20.7	7.03	4.34	4.74	6.62	6.53
130	26.0	24.3	94.1	128	163	196	218	204	168	127	85.9	29.9	33.7	15.1	5.40	4.02	4.13	4.26	4.93
135	15.0	12.2	88.8	132	168	197	215	202	171	130	81.0	9.11	14.6	11.2	3.97	3.31	3.70	4.12	4.33
140	9.88	21.1	71.2	121	165	185	199	190	171	119	67.8	15.7	11.5	8.55	2.94	3.10	2.82	3.65	3.45
145	5.71	11.8	42.0	89.6	129	145	150	147	132	89.2	42.2	12.1	6.57	5.68	2.88	3.00	2.79	2.96	3.03
150	3.65	4.61	5.76	56.3	84.0	105	106	106	88.9	56.5	12.8	3.43	3.29	3.53	2.88	2.89	2.75	2.91	2.97
155	3.50	3.22	6.17	47.6	63.4	74.6	74.6	76.3	65.4	49.1	2.59	3.35	3.40	3.31	2.91	2.72	2.75	2.84	2.91
160	3.51	3.30	7.47	2.49	27.2	53.1	59.3	55.1	35.7	2.60	8.90	3.27	3.56	3.32	2.96	2.61	2.80	2.77	2.64
165	3.52	3.38	3.66	8.33	11.7	2.47	2.64	2.65	5.71	8.06	3.45	3.18	3.69	3.34	3.02	2.61	2.82	2.74	2.58
170	3.54	3.43	3.47	4.99	3.28	7.17	6.10	6.72	4.57	3.85	3.21	3.14	3.73	3.35	3.07	2.74	2.80	2.73	2.90
175	3.60	3.49	3.29	3.57	3.14	3.72	3.08	4.13	3.42	3.17	3.16	3.12	3.76	3.36	3.13	2.79	2.78	2.72	2.95
180	3.69	3.52	3.22	3.00	3.09	3.03	3.08	3.09	2.96	2.90	3.02	3.12	3.77	3.37	3.15	2.87	2.78	2.72	2.83

Table--2 UNIT: cd

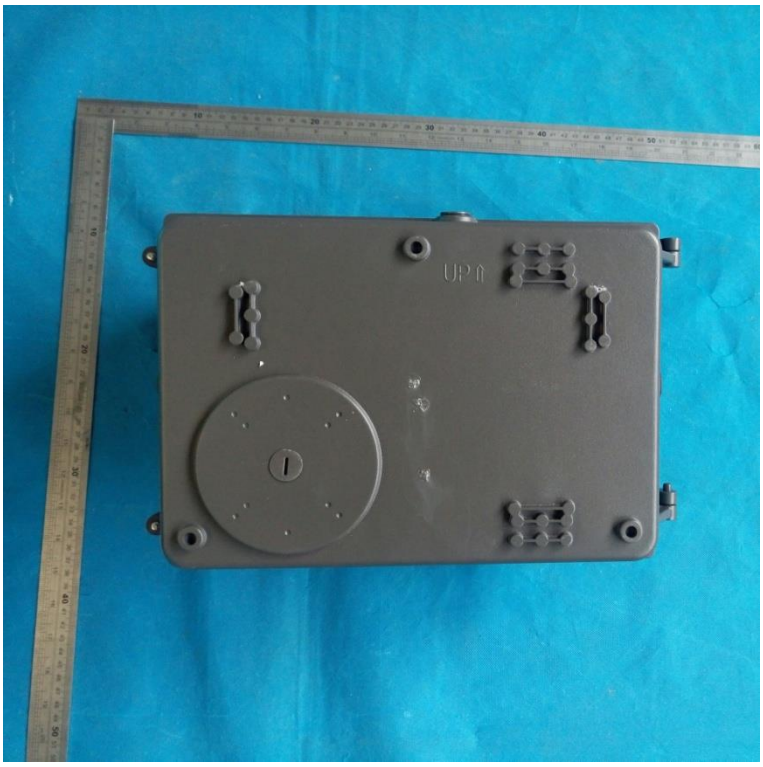
γ (DEG) \ C(DEG)	285	300	315	330	345
0	1354	1330	1334	1337	1345
5	1184	1064	904	867	997
10	720	818	699	1128	849
15	580	669	685	639	848
20	531	611	578	668	890
25	460	498	533	602	852
30	402	409	457	540	757
35	292	356	390	452	658
40	198	250	317	380	526
45	139	186	255	322	400
50	88.6	131	204	269	347
55	60.2	81.9	150	219	321
60	41.9	46.9	104	181	243
65	20.5	22.9	67.8	132	195
70	2.89	6.35	41.3	93.6	156
75	2.95	4.36	22.6	70.8	124
80	3.57	3.90	18.3	53.1	98.6
85	3.91	4.01	14.0	43.3	80.2
90	4.48	4.11	10.4	36.1	71.4
95	6.17	5.16	8.34	29.5	64.6
100	7.89	6.11	7.55	20.1	47.6
105	8.27	6.55	6.55	10.4	26.4
110	8.61	6.58	5.54	15.1	36.7
115	8.45	6.60	5.33	11.5	28.8
120	7.83	5.79	4.52	9.23	23.3
125	6.51	4.54	4.06	7.02	18.8
130	4.11	4.06	3.65	5.23	14.7
135	3.94	3.59	3.09	3.75	8.63
140	3.66	3.04	2.87	2.71	7.72
145	3.22	2.97	2.81	2.73	4.85
150	3.07	2.90	2.74	2.76	2.93
155	3.03	2.79	2.68	2.73	2.79
160	2.99	2.70	2.67	2.71	2.79
165	2.83	2.74	2.66	2.69	2.81
170	2.94	2.82	2.66	2.67	2.83
175	3.01	2.96	2.66	2.65	2.85
180	3.03	3.02	2.66	2.65	2.86

THD and PF Measurement Test Result:

Electrical Measurement:

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	iTHD
277.14	60	0.2070	52.57	0.9164	13.32

Photo of Sample:



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*******