



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 High Bay Light

Model name(s): 502284XX

Representative (Tested) Model: 50228461

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

Prepare By:

loston

Engineer: Leo Liu Date: 2017-06-13

Review By:

incer Tven

Technical Lead: Vincent Yuan Date: 2017-06-13

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Laboratory: Dongguan New Testing Centre Co., Ltd Page 1/11 Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China Tel: 86-755-2344 3526 Website: http://www.ntc-cert.com



R NVLAP LAB CODE 600150-0

Client Name:	ELEC-TECH INTERNATIONAL CO LTD
Brand Name:	ETI
Model Number:	502284XX (XX=61-70)
Product type:	High Bay Luminaires for Commercial and Industrial Buildings
Rating Input:	AC120-277V, 50/ 60Hz, 115W
Declared CCT:	5000K
Declared Light output:	15000 lm
LED Manufacturer:	Samsung
LED Model:	SPMWH1228
LED Quantity:	636 pcs
Forward current of LED Chip:	120mA
Date of Receipt Samples:	2017-06-13
Quantity of Receipt Samples:	2
Sample Number:	170613002-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
<u>Report Information</u>	
Issued Date of Test Report:	2017-06-13
Revised Date of Test Report:	N/A
Test Report No.:	NTCR17060021
Remark (If applicable)	N/A





Test Specifications:	
Date of Test	2017-06-13
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 $\pm 1^{\circ}$ 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 25° C \pm 1° 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						
25.1	40	Face Down	90	25						
Electric	al Data:									

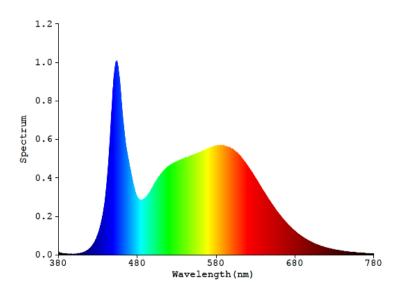
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.9448	112.1	0.9881

Color Data:

Parameter	Result
CCT(K)	5281
Color Rendering Index (CRI)	85.9
R9	20
Chromaticity, x	0.3376
Chromaticity, y	0.3449
Chromaticity u'	0.2089
Chromaticity v'	0.4802
Duv	-0.00027

Special Color Rendering										
R1	85	R9	20							
R2	93	R10	81							
R3	95	R11	84							
R4	84	R12	65							
R5	86	R13	88							
R6	88	R14	98							
R7	87	R15	81							
R8	70	-	-							

Spectrum Diagram:





NVLAP®

NVLAP LAB CODE 600150-0

Report No: NTCR17060021 Report Version: V1.1

Goniophotemeter Test Results:

Test Condition:											
Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time							
25.1	43	Face Down	90	25							
Electric	Electrical Data:										

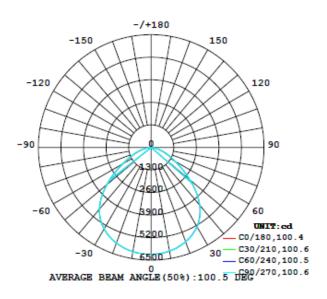
Voltage (Vac)	Frequency (Hz)	Frequency (Hz) Current (A)		Power Factor	
120.0	60	0.9448	112.1	0.9881	

Goniophotometer Data:

Parameter	Result
Total Luminous (lm)	15024
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	134.08
Zonal Lumens Distribution (20-50°)	55.3%
Beam Angle (°)	100.5
Center Beam Candle Power (cd)	6107

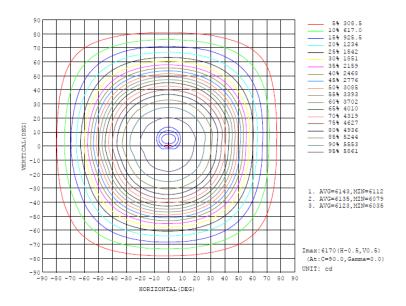
Luminous Intensity Distribution Diagram:

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM













ZONAL FLUX DIAGRAM:

۲	CO	C45	C90	C135	C180	C225	C270	C315	Ŷ	© zone	<pre> total </pre>	<lum, lam<="" th=""></lum,>
10	6065	6074	6066	6073	6103	6105	6107	6106	0- 10	584.5	584.5	3.89,3.89
20	5787	5793	5792	5809	5869	5885	5867	5875	10- 20	1690	2274	15.1,15.1
30	5270	5286	5285	5305	5422	5440	5417	5415	20- 30	2592	4866	32.4,32.4
40	4345	4394	4265	4420	4640	4654	4621	4595	20- 40	3111	7977	52.1,52.1
50	2908	2932	2941	3013	3326	2340	3306	3262	40- 50	2966	10942	72.8,72.8
60	1525	1590	1609	1657	1861	1919	1895	1858	50- 60	2141	12083	87.1,87.1
70	705.3	775.0	825.1	821.9	896.9	965.9	995.8	934.6	60- 70	1247	14330	95.4,95.4
80	126.7	180.4	217.0	211.4	295.8	325.6	358.2	294.7	70- 80	578.5	14908	99.2,99.2
90	1.410	1.540	1.603	1.473	2.796	3.007	1.788	1.713	80- 90	76.48	14985	99.7,99.7
100	1.665	2.764	2.172	2.499	1.928	1.663	2.370	1.665	90-100	1.870	14987	99.8,99.8
110	3.648	4.745	4.474	4.356	3.527	3.200	4.419	3.261	100-110	3.075	14990	99.8,99.8
120	7.103	6.418	7.229	7.368	5.702	5.380	6.724	5.380	110-120	4.979	14995	99.8,99.8
130	9.668	7.699	9.923	8.007	8.458	6.852	8.644	6.597	120-130	6.587	15001	99.8,99.8
140	10.28	11.22	11.33	8.841	9.224	7.950	10.44	7.751	130-140	7.079	15008	99.9,99.9
150	11.47	12.18	9.989	10.96	9.677	8.393	10.63	8.320	140-150	6.259	15015	99.9,99.9
160	12.17	12.31	9.923	11.91	9.929	8.845	10.56	9.800	150-160	4.905	15020	100,100
170	13.96	13.01	12.48	13.39	12.05	11.46	12.17	11.97	160-170	3.169	15023	100,100
180	14.48	13.91	13.96	13.58	14.41	13.20	14.08	13.26	170-180	1.274	15024	100,100
DEG		LUI	MINOUS INTE	NSITY:cd	Less than	25% Percen	t = 6.2 ł			UNI	T:lm	





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Luminous Distribution Intensity Data:

Table1 C(DEG)																UNI	T: ed		
(DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	6164	6162	6163	6170	6155	6163	6170	6154	6164	6165	6155	6159	6164	6162	6163	6170	6155	6163	6170
5	6132	6138	6132	6138	6137	6134	6142	6132	6133	6140	6146	6139	6154	6155	6150	6161	6150	6149	6157
10	6065	6062	6067	6074	6070	6070	6066	6069	6074	6073	6078	6074	6103	6104	6096	6105	6096	6091	6107
15	5948	5949	5960	5952	5953	5953	5958	5949	5961	5964	5963	5957	6015	6018	6011	6020	6004	6010	6005
20	5787	5789	5785	5793	5789	5792	5792	5793	5808	5809	5802	5803	5869	5879	5876	5885	5866	5872	5867
25	5563	5565	5581	5574	5565	5572	5579	5571	5584	5591	5580	5580	5674	5692	5685	5694	5670	5676	5674
30	5270	5272	5279	5286	5274	5280	5285	5287	5301	5305	5294	5305	5422	5437	5438	5440	5425	5421	5417
35	4875	4878	4880	4895	4876	4889	4895	4905	4917	4934	4917	4927	5091	5106	5109	5111	5092	5078	5082
40	4345	4349 3674	4357 3670	4394 3682	4351 3682	4361 3696	4365 3701	4387 3722	4399 3732	4420 3764	4401 3751	4416 3761	4640	4652 4061	4666	4654	4638	4620	4621
50	2908	2886	2901	2932	2913	2937	2941	2964	2984	3013	3004	3017	3326	3344	3350	3340	3326	3309	3306
55	2160	2156	2178	2199	2196	2208	2215	2234	2248	2275	2259	2263	2559	2574	2589	2598	2578	2564	2563
60	1535	1536	1555	1590	1591	1615	1609	1629	1636	1657	1627	1620	1861	1881	1898	1919	1911	1900	1895
65	1060	1071	1091	1134	1155	1161	1165	1181	1186	1185	1148	1132	1309	1324	1348	1373	1391	1381	1378
70	705	713	734	775	799	829	825	837	835	822	784	768	897	908	936	966	997	998	996
75	413	415	425	452	479	505	508	519	509	498	465	458	573	583	606	631	662	671	670
80	127	138	159	180	200	216	217	226	223	211	192	187	296	303	315	326	351	359	358
85	12.6	12.0	12.2	13.0	12.7	13.8	12.9	14.4	14.8	15.7	13.8	13.4	27.5	31.9	49.4	68.9	87.6	79.6	74.3
90	1.41	1.41	1.47	1.54	1.60	1.54	1.60	1.53	1.60	1.47	1.41	1.34	2.80	3.09	4.06	3.01	3.16	2.02	1.79
95	1.35	1.79	1.47	1.99	1.60	1.99	1.60	2.05	1.54	1.73	1.41	1.60	1.48	1.47	1.66	1.54	1.79	1.66	1.79
100	1.67	2.50	1.79	2.76	2.11	2.89	2.17	2.76	1.92	2.50	1.66	2.31	1.93	1.47	2.18	1.66	2.24	1.73	2.37
105	2.49	3.40	2.68	3.53	3.07	3.78	3.26	3.71	2.88	3.33	2.43	3.08	2.63	1.98	2.82	2.30	3.14	2.56	3.33
110	3.65	4.42	3.58	4.74	4.09	5.00	4.47	4.93	3.90	4.36	3.52	3.97	3.53	2.88	3.59	3.20	4.10	3.64	4.42
115	4.16	4.75	4.22	5.58	5.50	6.34 7.81	5.69	6.21 7.75	5.18	5.77	4.67	4.75	4.68	3.97	4.55	4.23	5.32	4.79	5.57
120	8.13	8.45	7.75	7.50	7.80	9.15	8.57	9.33	7.93	8.01	6.65	8.26	6.02	5.76	6.66	6.28	7.49	7.10	7.75
125	9.67	9.61	9.02	_	8.00	10.4	9.92	10.7		8.01	9.01	9.54	8.46	7.10	6.66	6.85	8.07	7.81	8.64
135	10.4	10.1	10.3	9.68	9.02	10.4	11.1	11.1	9.28	8.01	10.6	10.9	9.22	8.26	7.50	7.82	8.83	8.76	9.41
140		10.1	11.1		9.15	10.6	11.3	11.1	9.66	8.84	11.2	11.6	9.22	8.77	8.71	7.95	9.79	9.66	10.4
145	11.3	11.7	12.0	11.9	9.15	10.6	11.5	10.9	8.58	9.87	11.2	12.1	9.16	9.22	9.86	7.95	10.2	10.0	10.6
150	11.5	11.7	12.0	12.2	9.34	10.6	9.99	10.3	7.81	11.0	11.2	12.1	9.68	9.86	10.7	8.39	10.2	10.0	10.6
155	12.6	11.7	11.6	12.3	9.60	10.9	9.92	9.97	8.76	11.8	11.2	11.6	10.4	10.4	10.9	8.78	10.9	10.1	10.6
160	12.2	11.3	11.6	12.3	10.4	11.1	9.92	10.2	10.1	11.9	11.2	10.8	9.93	10.2	10.9	8.85	10.9	11.0	10.6
165	11.2	11.2	12.5	12.9	11.8	13.1	11.5	12.0	12.0	12.7	11.8	11.0	9.67	10.2	10.9		11.0	11.0	10.9
170				13.0			12.5			13.4				11.8			12.5	12.0	12.2
																		13.8 14.5	
Table2 C(DEG)																UN	IT: c	d	
(DEG)	285									1									
0	-	300	315	330	345														
5	6154	6164	6165	6155	6159														
	6141	6164 6146	6165 6150	6155 6144	6159 6146														
10	6141 6087	6164 6146 6091	6165 6150 6106	6155 6144 6095	6159 6146 6092														
10 15	6141 6087 6000	6164 6146 6091 6009	6165 6150 6106 6010	6155 6144 6095 6003	6159 6146 6092 6006														
10 15 20	6141 6087 6000 5866	6164 6146 6091 6009 5862	6165 6150 6106 6010 5875	6155 6144 6095 6003 5855	6159 6146 6092 6006 5858														
10 15	6141 6087 6000	6164 6146 6091 6009 5862 5672	6165 6150 6106 6010 5875 5671	6155 6144 6095 6003 5855 5658	6159 6146 6092 6006 5858 5657														
10 15 20 25	6141 6087 6000 5866 5672	6164 6146 6091 6009 5862	6165 6150 6106 6010 5875	6155 6144 6095 6003 5855	6159 6146 6092 6006 5858														
10 15 20 25 30	6141 6087 6000 5866 5672 5415	6164 6146 6091 6009 5862 5672 5417	6165 6150 6106 6010 5875 5671 5415	6155 6144 6095 6003 5855 5658 5405	6159 6146 6092 6006 5858 5657 5399														
10 15 20 25 30 35	6141 6087 6000 5866 5672 5415 5079	6164 6146 6091 6009 5862 5672 5417 5079	6165 6150 6106 6010 5875 5671 5415 5070	6155 6144 6095 6003 5855 5658 5405 5405 5064	6159 6146 6092 6006 5858 5657 5399 5052														
10 15 20 25 30 35 40	6141 6087 6000 5866 5672 5415 5079 4609	6164 6146 6091 6009 5862 5672 5417 5079 4617	6165 6150 6106 6010 5875 5671 5415 5070 4595	6155 6144 6095 6003 5855 5658 5405 5064 4595	6159 6146 6092 6006 5858 5657 5399 5052 4584														
10 15 20 25 30 35 40 45	6141 6087 6000 5866 5672 5415 5079 4609 4006	6164 6146 6091 5862 5672 5417 5079 4617 4017	6165 6150 6106 6010 5875 5671 5415 5070 4595 3990	6155 6144 6095 6003 5855 5658 5405 5064 4595 3983	6159 6146 6092 6006 5858 5657 5399 5052 4584 3970														
10 15 20 25 30 35 40 45 50	6141 6087 6000 5866 5672 5415 5079 4609 4006 3285	6164 6146 6091 5862 5672 5672 5417 5079 4617 4017 3282	6165 6150 6106 6010 5875 5671 5415 5070 4595 3990 3262 2516 1858	6155 6144 6095 6003 5855 5658 5405 5064 4595 3983 3257 2504 1830	6159 6146 6092 6006 5858 5657 5399 5052 4584 3970 3240 2473 1789														
10 15 20 25 30 35 40 45 50 55 60 65	6141 6087 6000 5866 5672 5415 5079 4609 4006 3285 2541 1883 1364	6164 6146 6091 5862 5672 5417 5079 4617 4017 3282 2539	6165 6150 6106 6010 5875 5671 5415 5070 4595 3990 3262 2516 1858 1331	6155 6144 6095 6003 5855 5658 5405 5064 4595 3983 3257 2504 1830 1298	6159 6146 6092 6006 5858 5657 5399 5052 4584 3970 3240 2473														
10 15 20 25 30 35 40 45 50 55 60 65 70	6141 6087 6000 5866 5672 5415 5079 4609 4006 3285 2541 1883 1364 985	6164 6091 6009 5862 5672 5417 5079 4617 4017 3282 2539 1876 1361 978	6165 6150 6106 6010 5875 5671 5415 5070 4595 3990 3262 2516 1858 1331 935	6155 6144 6095 5855 5658 5405 5064 4595 3983 3257 2504 1830 1298 899	6159 6146 6092 6006 5858 5657 5399 5052 4584 3970 3240 2473 1789 1257 864														
10 15 20 25 30 35 40 45 50 55 55 60 65 70 75	6141 6087 6000 5866 5672 5415 5079 4609 4006 3285 2541 1883 1364 985 657	6164 6091 6009 5862 5672 5417 5079 4617 4017 3282 2539 1876 1361 978 645	6165 6150 6106 6010 5875 5671 5415 5070 4595 3990 3262 2516 1858 1331 935 601	6155 6144 6095 6003 5855 5658 5405 5064 4595 3983 3257 2504 1830 1298 899 573	6159 6146 6092 6006 5858 5657 5399 5052 4584 3970 3240 2473 1789 1257 864 543														
10 15 20 30 35 40 45 50 55 60 65 70 75 80	6141 6087 6000 5866 5672 5415 5079 4609 4006 3285 2541 1883 1364 985 657 346	6164 6146 6091 6009 5862 5672 5417 5079 4617 4017 3282 2539 1876 1361 978 645 334	6165 6150 6106 6010 5875 5671 5415 5070 4595 3990 3262 2516 1858 1331 935 601 295	6155 6144 6095 6003 5855 5658 5405 5064 4595 3983 3257 2504 1830 1298 899 573 281	6159 6146 6092 6006 5858 5657 5399 5052 4584 3970 3240 2473 1789 1257 864 543 265														
10 15 20 25 30 30 35 40 45 55 55 60 65 70 75 80 85	6141 6087 6000 5866 5672 5415 5079 4609 4006 3285 2541 1883 1364 985 657 346 63.4	6164 6146 6091 5862 5672 5417 5079 4617 4017 3282 2539 1876 1361 978 645 334 63.3	6165 6150 6106 6010 5875 5671 5415 5070 4595 3990 3262 2516 1858 1331 935 601 295 40.0	6155 6144 6095 5658 5658 5405 5064 4595 3983 3257 2504 1830 1298 899 573 281 27.8	6159 6146 6092 6006 5858 5657 5399 5052 4584 3970 3240 2473 1789 1257 864 543 265 21.2														
10 15 20 25 30 35 40 45 50 55 50 60 65 70 75 80 85 90	6141 6087 6000 5866 5672 5415 5079 4609 4006 3285 2541 1883 1364 985 657 346 63.4 1.87	6164 6146 6091 5862 5472 5477 5079 4617 4017 3282 2539 1876 1361 978 645 334 63.3 1.60	6165 6150 6106 6010 5875 5571 5415 5571 5415 5070 4595 3990 3262 2516 1858 1331 935 601 295 40.0 1.71	6155 6144 6095 5603 5855 5064 4595 3983 3257 2504 1830 1298 899 573 281 27.8 1.47	6159 6146 6092 5056 5858 5657 5399 5052 4584 3970 3240 2473 3240 2473 1789 1257 864 543 265 21.2 1.60														
10 15 20 25 30 40 45 55 55 55 60 65 60 65 70 75 80 85 80 85 90 90	6141 6087 6000 5866 5672 5415 5079 4609 4006 3285 2541 1883 1364 985 657 346 63.4 1.87 1.60	6164 6091 6009 5662 5427 5417 5079 4617 4017 3282 2539 1876 1361 978 645 334 63.3 1.60 1.73	6165 6150 6106 6010 5875 5671 5571 5571 5571 4595 3990 3262 2516 1858 1331 935 601 295 40.0 1.71 1.54	6155 6144 6095 6003 5855 5658 5405 5964 4595 3983 3257 2504 1830 1298 899 573 281 27.8 1.47 1.60	6159 6146 6092 5006 5858 5557 5399 5052 4584 3970 3240 2473 3240 2473 1789 1257 864 543 265 21.2 1.60 1.41														
10 15 20 25 30 35 40 45 50 55 55 60 65 70 75 80 85 80 85 90 95 90	6141 6087 6000 5866 5672 5415 5079 4609 4006 3285 2541 883 1364 985 657 346 63.4 1.87 1.60 1.60	6164 6164 6091 5862 5672 5417 5079 4617 4017 3282 2539 1876 645 334 645 334 645 334 1.60 1.73 2.30	6165 6150 6010 5875 5671 5415 5070 4595 3990 3262 2516 1858 1331 935 601 295 40.0 1.71 1.54 1.67	6155 6144 6095 6003 5855 5658 5405 5064 4595 3983 3257 2504 1830 2598 1298 899 573 281 27.8 1.47 1.60 2.18	6159 6146 6092 6006 5858 5657 5399 5052 4584 3970 3240 2473 1257 864 543 265 21.2 1.60 1.41 1.41														
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THD and PF Measurement Test Result:

Electrical Measurement:

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	iTHD
277.02	60	0.4521	110.5	0.8823	18.51









 Laboratory: Dongguan New Testing Centre Co., Ltd
 Page
 9 / 11

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NVLAP LAB CODE 600150-0

Report No: NTCR17060021 Report Version: V1.1

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****