

## 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):

502286##

Representative (Tested) Model:

50228661

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

Prepare By:



Engineer: Leo Liu

Date: 2018-05-09

Review By:



Technical Lead: Vincent Yuan

Date: 2018-05-10

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:	502286## (##=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:	SPMWHX228FD5XXXXXX
LED Quantity:	636 pcs
Forward current of LED Chip:	160mA
Driver Manufacturer:	ECU ELECTRONICS INDUSTRIAL CO., LTD
Driver Model:	EWB(D)-150-700mA
Date of Receipt Samples:	2018-04-20
Quantity of Receipt Samples:	2
Sample Number:	180420001-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:	2018-05-10
Revised Date of Test Report:	N/A
Test Report No.:	NTCR18050027
Remark (If applicable)	The product can be field-adjustable, the default wattage is 115W.

<b>Test Specifications:</b>	
Date of Test	2018-04-20
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

<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>
<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 with Min. wattage)**

**Test Condition:**

Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
25.1	40	Face Down	90	25

**Electrical Data:**

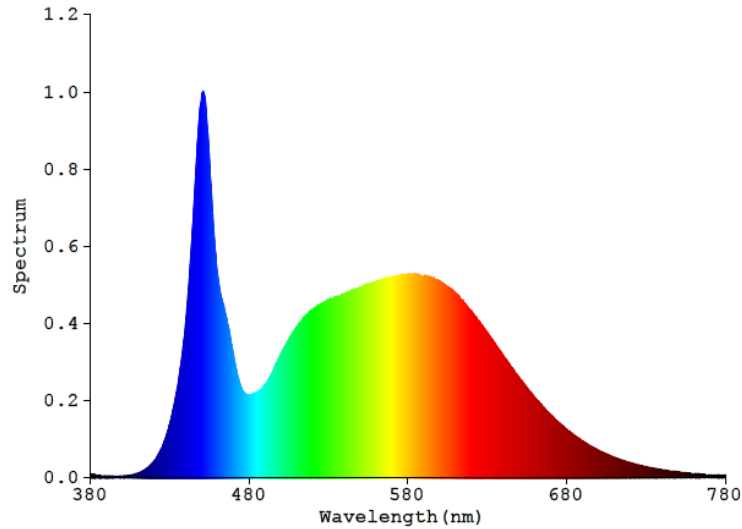
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.6466	76.55	0.9865

**Color Data:**

Parameter	Result
CCT (K)	5203
Color Rendering Index (CRI)	85.3
R9	18
Chromaticity, x	0.3397
Chromaticity, y	0.3484
Chromaticity u'	0.2090
Chromaticity v'	0.4823
Duv	0.00057

Special Color Rendering			
R1	84	R9	18
R2	91	R10	77
R3	94	R11	84
R4	85	R12	64
R5	85	R13	86
R6	86	R14	97
R7	88	R15	80
R8	70	-	-

**Spectrum Diagram:**



**Goniophotometer Test Results (Test with Min. Wattage):**

**Test Condition:**

Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
25.1	43	Face Down	90	25

**Electrical Data:**

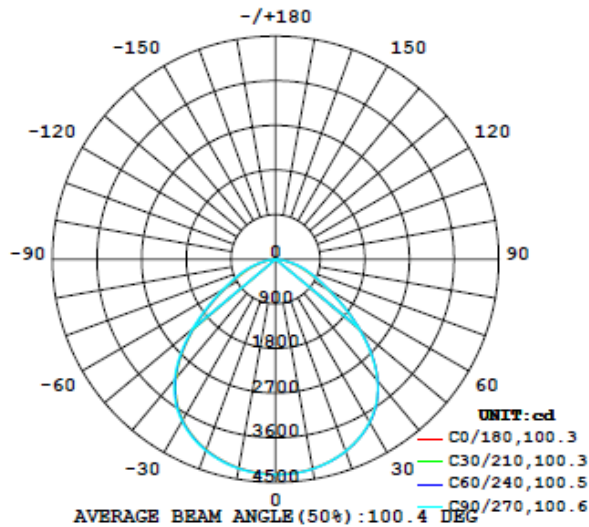
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.6466	76.55	0.9865

**Goniophotometer Data:**

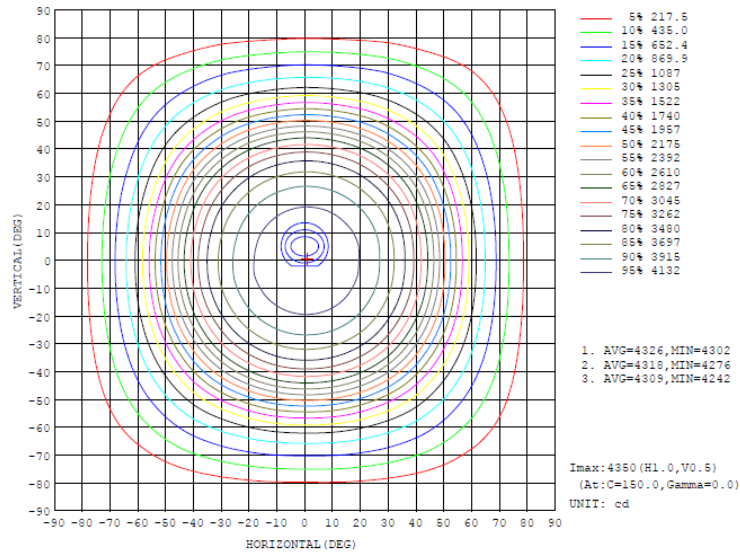
Parameter	Result
Total Luminous (lm)	10585.5
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	138.29
Zonal Lumens Distribution (20-50°)	57.7%
Beam Angle (°)	100.4

**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	Φ zone	Φ total	llum, Lamp
10	4286	4294	4294	4289	4271	4278	4290	4297	0- 10	412.0	412.0	2.89,2.89
20	4118	4127	4119	4108	4089	4094	4112	4124	10- 20	1191	1602	15.1,15.1
30	3795	3805	3788	3766	3748	3752	3778	3795	20- 30	1829	2442	22.4,22.4
40	3202	3214	3187	3146	3127	3134	3177	3201	30- 40	2196	2628	25.2,25.2
50	2227	2241	2209	2164	2137	2145	2201	2228	40- 50	2086	2714	22.9,22.9
60	1218	1266	1238	1216	1161	1194	1238	1252	50- 60	1502	2216	27.1,27.1
70	592.9	662.0	665.4	634.4	562.5	614.4	661.8	651.1	60- 70	889.1	10105	95.5,95.5
80	164.6	203.1	204.0	176.6	138.8	161.6	202.6	195.0	70- 80	423.5	10529	99.5,99.5
90	0.0006	0	0	0	0.0042	0	0	0.0004	80- 90	52.42	10581	100,100
100	0.1119	0.2167	0.4192	0.2497	0.1020	0.2092	0.4122	0.1799	90-100	0.0922	10581	100,100
110	0.2302	0.4875	0.7132	0.5095	0.2527	0.2959	0.6068	0.3713	100-110	0.2705	10582	100,100
120	0.4216	0.7530	0.8954	0.7362	0.4819	0.7281	0.8622	0.6523	110-120	0.5929	10582	100,100
130	0.5427	1.011	1.232	0.9829	0.6022	0.9079	1.015	0.8217	120-130	0.6981	10582	100,100
140	0.4741	1.252	1.448	1.244	0.9371	1.353	1.243	1.232	130-140	0.8170	10584	100,100
150	0.9982	1.297	1.469	1.151	0.8294	1.409	1.574	1.413	140-150	0.7681	10584	100,100
160	1.085	1.260	1.132	1.459	1.084	1.297	1.360	1.242	150-160	0.6232	10585	100,100
170	0.6614	1.217	1.026	1.200	0.9500	1.167	1.040	1.310	160-170	0.3673	10585	100,100
180	1.040	0.8102	0.9877	0.8265	1.039	0.8106	0.9970	0.8277	170-180	0.0897	10586	100,100
DEG	LUMINOUS INTENSITY:cd Less than 25% Percent = 9.6 %										UNIT:lm	



NVLAP LAB CODE 600150-0

Report No: NTCR18050027

Report Version: V1.1

**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	0	4333	4336	4339	4341	4343	4345	4347	4348	4348	4348	4350	4349	4333	4336	4339	4341	4343	4345	4347
5	0	4323	4327	4329	4331	4333	4333	4334	4334	4333	4333	4332	4332	4316	4318	4322	4323	4327	4329	4332
10	0	4286	4291	4292	4294	4294	4294	4294	4293	4290	4289	4287	4287	4271	4272	4277	4278	4282	4285	4290
15	0	4218	4225	4225	4226	4226	4225	4223	4221	4217	4214	4211	4211	4196	4196	4201	4203	4208	4212	4218
20	0	4118	4126	4126	4127	4125	4123	4119	4116	4110	4108	4103	4103	4089	4087	4092	4094	4100	4105	4112
25	0	3979	3989	3987	3988	3985	3982	3976	3972	3964	3961	3954	3955	3942	3938	3946	3947	3955	3960	3969
30	0	3795	3805	3802	3805	3800	3797	3788	3783	3772	3766	3757	3759	3748	3741	3751	3752	3762	3769	3778
35	0	3543	3556	3550	3554	3550	3544	3533	3526	3510	3502	3491	3495	3485	3475	3486	3491	3502	3510	3523
40	0	3202	3215	3208	3214	3207	3200	3187	3178	3158	3146	3131	3135	3127	3115	3128	3134	3150	3161	3177
45	0	2752	2770	2759	2767	2759	2751	2735	2723	2701	2689	2665	2670	2664	2648	2666	2673	2692	2705	2726
50	0	2227	2245	2233	2241	2232	2226	2209	2198	2173	2164	2138	2141	2137	2119	2140	2145	2166	2179	2201
55	0	1688	1718	1704	1721	1705	1707	1684	1683	1655	1655	1622	1623	1614	1592	1628	1626	1652	1655	1684
60	0	1218	1245	1243	1266	1254	1255	1238	1237	1218	1216	1180	1170	1161	1147	1181	1194	1214	1217	1238
65	0	862	882	894	921	922	920	911	908	899	888	852	831	819	816	845	874	892	897	909
70	0	593	615	629	662	674	676	665	665	653	634	594	576	564	560	591	614	647	649	662
75	0	367	386	397	427	441	447	435	435	420	400	363	349	342	336	362	381	410	418	430
80	0	165	181	182	203	212	218	204	208	194	177	153	146	139	136	153	162	188	192	203
85	0	10.4	11.8	12.8	16.2	16.9	18.2	12.5	13.9	12.2	12.5	9.73	8.33	8.41	8.40	9.22	10.2	11.4	11.4	11.5
90	0	0.00	0.00	0.02	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
95	0	0.02	0.01	0.07	0.04	0.04	0.07	0.12	0.10	0.06	0.08	0.12	0.02	0.04	0.03	0.05	0.08	0.11	0.10	0.16
100	0	0.11	0.11	0.18	0.22	0.25	0.33	0.42	0.37	0.28	0.25	0.22	0.15	0.10	0.13	0.13	0.21	0.27	0.34	0.41
105	0	0.22	0.24	0.32	0.34	0.40	0.47	0.58	0.51	0.42	0.36	0.34	0.29	0.23	0.24	0.23	0.30	0.36	0.49	0.51
110	0	0.33	0.39	0.44	0.49	0.53	0.62	0.71	0.65	0.56	0.51	0.46	0.41	0.35	0.35	0.33	0.40	0.48	0.62	0.61
115	0	0.42	0.50	0.56	0.63	0.67	0.77	0.81	0.78	0.70	0.62	0.58	0.52	0.47	0.46	0.44	0.57	0.63	0.73	0.73
120	0	0.43	0.55	0.67	0.75	0.81	0.91	0.89	0.92	0.82	0.74	0.70	0.55	0.48	0.47	0.48	0.73	0.80	0.81	0.86
125	0	0.44	0.49	0.68	0.95	0.99	1.04	1.04	1.03	0.97	0.93	0.66	0.59	0.45	0.38	0.57	0.88	0.93	0.92	0.94
130	0	0.54	0.72	0.89	1.01	1.18	1.18	1.23	1.13	1.14	0.98	0.94	0.73	0.60	0.62	0.89	0.91	1.08	1.10	1.01
135	0	0.66	0.79	0.94	1.09	1.23	1.38	1.38	1.32	1.19	1.09	1.00	0.89	0.79	0.91	1.08	1.13	1.19	1.28	1.21
140	0	0.47	0.86	0.84	1.25	1.25	1.36	1.45	1.30	1.23	1.24	0.94	1.03	0.94	1.09	1.04	1.35	1.30	1.23	1.24
145	0	0.55	0.89	1.06	1.47	1.44	1.50	1.40	1.50	1.45	1.40	1.00	0.98	0.73	1.02	1.05	1.45	1.49	1.44	1.39
150	0	1.00	1.37	1.41	1.30	1.55	1.35	1.47	1.46	1.59	1.15	1.23	1.02	0.83	1.24	1.28	1.40	1.62	1.70	1.57
155	0	1.12	1.52	1.44	1.29	1.09	1.16	1.46	1.53	1.42	1.47	1.27	1.18	0.62	1.18	1.41	1.54	1.60	1.56	1.46
160	0	1.08	1.32	1.14	1.26	1.18	1.14	1.13	1.33	1.46	1.46	1.34	1.28	1.08	1.29	1.50	1.40	1.50	1.56	1.36
165	0	0.95	1.21	1.14	1.18	1.29	1.38	1.19	1.45	1.47	1.43	1.42	1.42	1.29	1.60	1.65	1.52	1.32	1.48	1.16
170	0	0.66	0.95	1.06	1.22	1.18	1.09	1.04	1.20	1.30	1.30	1.23	1.06	0.95	1.09	1.18	1.17	1.31	1.32	1.04
175	0	0.51	0.68	0.86	0.84	0.82	0.77	0.86	1.03	1.03	0.97	0.92	0.90	0.86	0.73	0.80	0.98	1.01	0.92	0.69
180	0	1.04	0.96	0.84	0.81	0.75	0.88	0.99	0.88	0.85	0.83	0.93	0.95	1.04	0.96	0.84	0.81	0.75	0.88	0.99

Table--2 UNIT: cd

C (DEG) y (DEG)		285	300	315	330	345															
0	0	4348	4348	4348	4350	4349															
5	0	4334	4336	4336	4339	4339															
10	0	4293	4295	4297	4301	4302															
15	0	4221	4225	4228	4233	4234															
20	0	4116	4121	4124	4132	4133															
25	0	3973	3979	3982	3993	3994															
30	0	3783	3790	3795	3809	3810															
35	0	3528	3537	3542	3559	3559															
40	0	3184	3195	3201	3219	3217															
45	0	2732	2747	2753	2772	2768															
50	0	2210	2224	2228	2247	2241															
55	0	1681	1706	1700	1729	1703															
60	0	1238	1256	1252	1261	1234															
65	0	912	921	913	902	878															
70	0	662	673	651	636	607															
75	0	431	435	414	401	377															
80	0	201	207	185	187	173															
85	0	13.1	13.5	13.3	13.3	10.6															
90	0	0.00	0.00	0.00	0.00	0.00															
95	0	0.08	0.07	0.07	0.06	0.04															
100	0	0.32	0.25	0.18	0.14	0.11															
105	0	0.48	0.36	0.28	0.21	0.22															
110	0	0.60	0.47	0.37	0.31	0.34															
115	0	0.72	0.63	0.50	0.39	0.44															
120	0	0.82	0.76	0.65	0.46	0.47															
125	0	0.93	0.89	0.81	0.53	0.34															
130	0	1.09	1.07	0.83	0.75	0.51															
135	0	1.27	1.13	1.08	0.94	0.81															
140	0	1.18	1.30	1.23	0.84	0.95															
145	0	1.27	1.40	1.41	1.14	0.85															
150	0	1.45	1.64	1.41	1.35	1.32															
155	0	1.22	1.19	1.39	1.54	1.52															
160	0	1.31	1.29	1.34	1.49	1.42															
165	0	1.47	1.32	1.18	1.31	1.28															
170	0	1.10	1.28	1.31	1.18	0.76															
175	0	0.61	0.65	0.77	0.70	0.59															
180	0	0.88	0.85	0.83	0.93	0.95															



**Integrating Sphere Test Results (Test with Max. wattage)**

**Test Condition:**

Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
25.1	40	Face Down	90	25

**Electrical Data:**

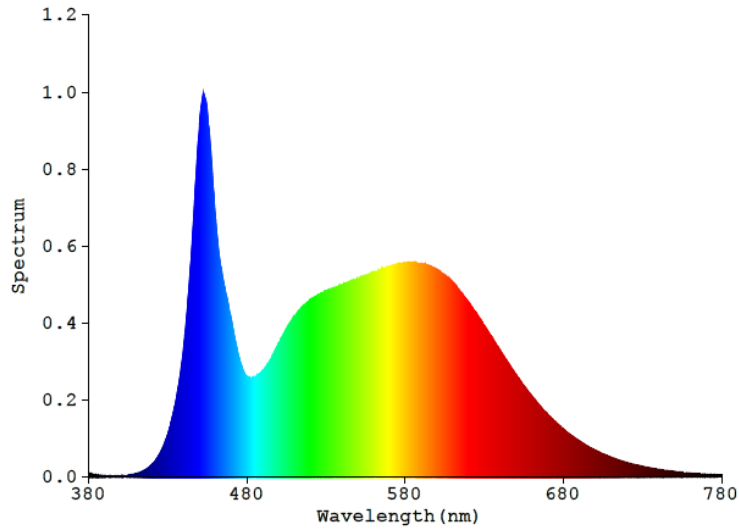
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.9408	112.2	0.9930

**Color Data:**

Parameter	Result
CCT (K)	5193
Color Rendering Index (CRI)	84.7
R9	20
Chromaticity, x	0.3398
Chromaticity, y	0.3454
Chromaticity u'	0.2102
Chromaticity v'	0.4808
Duv	-0.00095

Special Color Rendering			
R1	84	R9	20
R2	89	R10	73
R3	91	R11	85
R4	85	R12	64
R5	85	R13	85
R6	84	R14	95
R7	88	R15	80
R8	72	-	-

**Spectrum Diagram:**



**Goniophotometer Test Results (Test with Max. Wattage):**

**Test Condition:**

Test Ambient	Test Humidity	Orientation	Stabilization Time	Test Time
25.1	43	Face Down	90	25

**Electrical Data:**

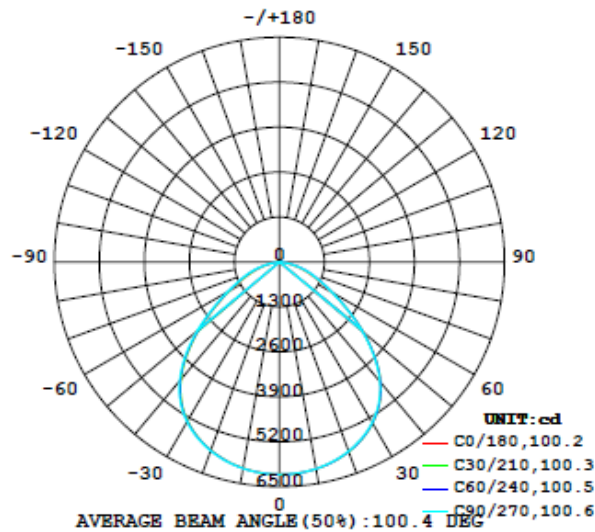
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.9408	112.2	0.9930

**Goniophotometer Data:**

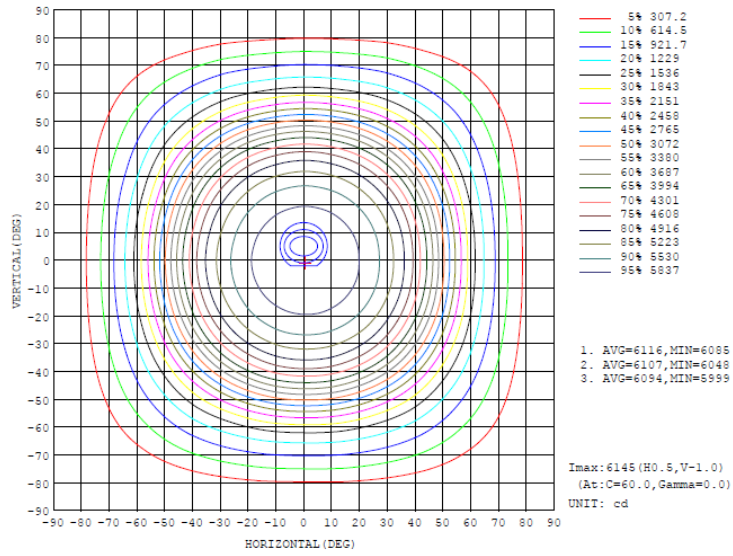
Parameter	Result
Total Luminous (lm)	14968.6
Total Luminous per foot (lm/ft)	N/A
Luminous Efficacy (lm/w)	133.45
Zonal Lumens Distribution (20-50°)	57.7%
Beam Angle (°)	100.4

**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	6073	6077	6068	6059	6055	6055	6063	6071	0- 10	582.8	582.8	2.85, 2.85
20	5824	5829	5820	5802	5797	5795	5815	5827	10- 20	1685	2267	15.1, 15.1
30	5373	5383	5381	5319	5316	5311	5345	5362	20- 30	2587	4854	32.4, 32.4
40	4529	4547	4500	4443	4438	4437	4498	4523	30- 40	3105	7959	52.2, 52.2
50	3146	3169	3112	3053	3036	3027	3119	3152	40- 50	2950	10909	72.9, 72.9
60	1717	1790	1744	1717	1652	1691	1758	1773	50- 60	2122	13021	87.1, 87.1
70	838.9	926.4	938.8	894.8	802.1	872.1	929.2	925.8	60- 70	1257	14288	95.5, 95.5
80	230.2	282.8	286.0	281.3	194.1	228.4	287.2	262.6	70- 80	598.7	14887	99.5, 99.5
90	0.0020	0.0004	0.0086	0.0170	0.0485	0.0391	0.0117	0.0352	80- 90	75.10	14962	100, 100
100	0.2040	0.2547	0.4398	0.4008	0.1902	0.3287	0.6266	0.2392	90-100	0.1767	14962	100, 100
110	0.8126	0.7382	1.052	0.7487	0.5466	0.6048	0.9016	0.5684	100-110	0.8706	14962	100, 100
120	0.4583	1.112	1.298	1.085	0.7301	1.074	1.262	0.9677	110-120	0.9661	14964	100, 100
130	0.8868	1.476	1.787	1.425	0.8929	1.320	1.465	1.219	120-130	1.029	14965	100, 100
140	0.7092	1.814	2.095	1.805	1.373	1.954	1.808	1.791	130-140	1.190	14966	100, 100
150	1.448	1.887	2.122	1.679	1.169	2.021	2.248	2.040	140-150	1.116	14967	100, 100
160	1.879	1.832	1.634	2.098	1.557	2.037	1.955	1.938	150-160	0.9014	14968	100, 100
170	0.9769	1.768	1.492	1.880	1.388	1.701	1.822	1.902	160-170	0.8219	14968	100, 100
180	1.480	1.183	1.412	1.198	1.489	1.184	1.416	1.201	170-180	0.1812	14969	100, 100
DEG	LUMINOUS INTENSITY:cd Less than 35% Percent = 9.6 %										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	6142	6142	6143	6143	6145	6144	6145	6144	6143	6143	6144	6144	6142	6142	6143	6143	6145	6144	6145
5	6127	6129	6130	6129	6129	6129	6127	6125	6122	6121	6121	6120	6119	6117	6119	6119	6122	6122	6125
10	6073	6077	6077	6077	6075	6073	6068	6066	6062	6059	6057	6056	6055	6052	6055	6055	6060	6061	6065
15	5977	5984	5983	5982	5979	5976	5967	5963	5958	5954	5950	5949	5949	5944	5947	5948	5954	5956	5964
20	5834	5843	5842	5839	5834	5830	5820	5815	5807	5802	5797	5795	5797	5789	5793	5795	5804	5806	5815
25	5637	5650	5647	5645	5636	5633	5618	5613	5601	5596	5589	5587	5590	5580	5584	5587	5598	5601	5613
30	5373	5388	5384	5383	5374	5368	5351	5344	5328	5319	5310	5309	5316	5301	5307	5311	5327	5330	5345
35	5017	5035	5029	5030	5018	5012	4989	4981	4959	4948	4935	4934	4943	4924	4933	4940	4959	4965	4985
40	4529	4551	4544	4547	4533	4526	4500	4488	4460	4443	4429	4425	4438	4412	4425	4437	4461	4470	4498
45	3891	3918	3911	3913	3897	3890	3858	3847	3816	3796	3777	3770	3785	3754	3769	3783	3816	3825	3863
50	3146	3175	3169	3169	3152	3148	3112	3105	3071	3053	3030	3021	3036	3005	3021	3037	3070	3080	3119
55	2380	2417	2420	2422	2405	2403	2372	2366	2337	2323	2299	2277	2283	2257	2288	2303	2331	2341	2377
60	1717	1760	1763	1790	1767	1778	1744	1748	1719	1717	1673	1651	1652	1625	1668	1691	1722	1720	1758
65	1213	1248	1264	1303	1295	1301	1278	1282	1263	1253	1203	1172	1166	1151	1194	1229	1266	1263	1289
70	839	869	894	936	951	956	939	940	923	895	845	811	802	793	834	872	918	919	939
75	516	546	564	604	621	632	612	616	593	565	516	493	488	477	510	539	583	591	612
80	230	254	259	284	298	305	286	291	273	251	219	201	194	193	216	228	268	272	287
85	14.9	34.0	42.6	52.8	44.9	55.4	47.0	48.2	42.5	36.3	13.2	11.8	12.2	11.0	12.9	13.6	40.6	40.2	46.2
90	0.00	0.00	0.03	0.00	0.00	0.00	0.09	0.01	0.02	0.02	0.03	0.01	0.05	0.03	0.04	0.04	0.02	0.02	0.01
95	0.07	0.06	0.14	0.10	0.10	0.14	0.23	0.19	0.13	0.16	0.21	0.07	0.10	0.08	0.12	0.16	0.19	0.18	0.26
100	0.20	0.21	0.30	0.35	0.41	0.52	0.64	0.56	0.44	0.40	0.35	0.26	0.19	0.22	0.23	0.34	0.43	0.52	0.63
105	0.36	0.39	0.49	0.53	0.61	0.71	0.87	0.77	0.64	0.55	0.53	0.46	0.38	0.38	0.37	0.46	0.56	0.74	0.76
110	0.51	0.59	0.67	0.74	0.80	0.93	1.05	0.96	0.83	0.77	0.68	0.62	0.55	0.53	0.51	0.60	0.73	0.92	0.90
115	0.64	0.75	0.84	0.93	0.99	1.14	1.19	1.15	1.03	0.93	0.87	0.78	0.71	0.68	0.66	0.85	0.94	1.08	1.07
120	0.66	0.82	0.99	1.11	1.19	1.34	1.30	1.34	1.21	1.08	1.03	0.82	0.73	0.71	0.72	1.07	1.18	1.20	1.26
125	0.68	0.74	1.00	1.38	1.45	1.52	1.52	1.50	1.42	1.36	0.98	0.88	0.87	0.58	0.85	1.29	1.37	1.34	1.41
130	0.84	1.06	1.30	1.48	1.72	1.71	1.79	1.65	1.66	1.43	1.37	1.08	0.89	0.92	1.31	1.33	1.57	1.61	1.47
135	0.98	1.16	1.38	1.59	1.78	2.00	2.00	1.91	1.73	1.58	1.45	1.30	1.16	1.33	1.57	1.65	1.73	1.84	1.76
140	0.71	1.26	1.23	1.81	1.82	1.98	2.09	1.88	1.78	1.80	1.38	1.50	1.37	1.59	1.52	1.95	1.89	1.78	1.81
145	0.84	1.29	1.55	2.16	2.09	2.17	2.03	2.17	2.10	2.02	1.45	1.42	1.11	1.49	1.53	2.09	2.15	2.07	2.01
150	1.44	1.99	2.07	1.89	2.26	1.95	2.12	2.11	2.29	1.68	1.79	1.48	1.17	1.81	1.86	2.03	2.34	2.44	2.25
155	1.63	2.18	2.09	1.88	1.58	1.69	2.09	2.20	2.04	2.13	1.82	1.71	0.91	1.72	2.02	2.22	2.30	2.25	1.12
160	1.58	1.91	1.67	1.83	1.72	1.65	1.63	1.90	2.10	2.10	1.93	1.85	1.56	1.86	2.17	2.04	2.17	2.24	1.96
165	1.39	1.76	1.65	1.71	1.85	1.99	1.72	2.07	2.12	2.05	2.05	2.03	1.86	2.31	2.38	2.19	1.89	2.14	1.72
170	0.98	1.38	1.55	1.77	1.70	1.59	1.49	1.73	1.87	1.88	1.79	1.54	1.39	1.59	1.71	1.70	1.89	1.91	1.52
175	0.76	1.00	1.27	1.23	1.19	1.13	1.26	1.50	1.50	1.41	1.34	1.32	1.26	1.06	1.24	1.43	1.51	1.35	1.03
180	1.49	1.40	1.22	1.18	1.10	1.28	1.41	1.29	1.23	1.20	1.36	1.38	1.49	1.40	1.23	1.18	1.10	1.28	1.42

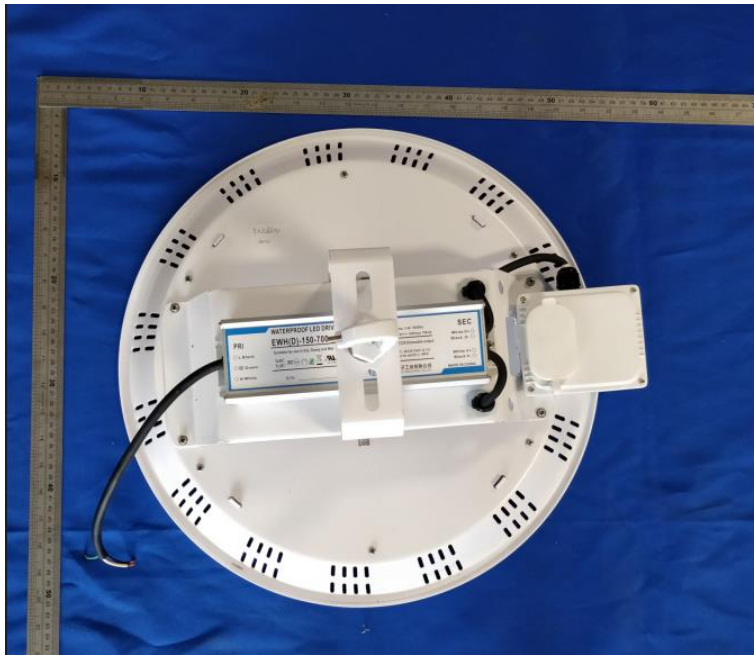
Table--2 UNIT: cd

C (DEG) y (DEG)	285	300	315	330	345
0	6144	6143	6143	6144	6144
5	6124	6126	6127	6129	6130
10	6066	6069	6071	6075	6077
15	5964	5969	5973	5979	5981
20	5815	5823	5827	5835	5838
25	5613	5622	5628	5639	5643
30	5345	5355	5362	5375	5381
35	4987	4998	5007	5021	5027
40	4499	4514	4523	4538	4545
45	3862	3881	3892	3906	3911
50	3122	3143	3152	3167	3170
55	2379	2400	2407	2422	2411
60	1750	1776	1773	1774	1745
65	1283	1302	1287	1270	1237
70	938	952	926	895	857
75	609	616	586	564	535
80	285	291	263	260	246
85	46.5	50.6	44.1	37.4	16.1
90	0.02	0.02	0.04	0.02	0.02
95	0.16	0.14	0.14	0.14	0.10
100	0.50	0.41	0.30	0.24	0.20
105	0.72	0.54	0.44	0.34	0.35
110	0.89	0.71	0.57	0.48	0.52
115	1.05	0.93	0.74	0.59	0.67
120	1.20	1.12	0.97	0.69	0.70
125	1.36	1.30	1.18	0.81	0.53
130	1.59	1.55	1.22	1.12	0.79
135	1.86	1.64	1.56	1.37	1.19
140	1.70	1.88	1.78	1.24	1.39
145	1.85	2.03	2.04	1.66	1.24
150	2.12	2.36	2.04	1.97	1.92
155	1.77	1.74	1.99	2.21	2.17
160	1.90	1.88	1.94	2.16	2.04
165	2.11	1.91	1.71	1.89	1.86
170	1.61	1.90	1.90	1.72	1.13
175	0.91	0.97	1.14	1.03	0.88
180	1.29	1.23	1.20	1.36	1.38

**THD and PF Measurement Test Result:**

**Electrical Measurement:**

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	iTHD
277.0	60	0.3042	75.85	0.9001	13.77
277.0	60	0.4513	110.02	0.8801	19.62



**Equipment List:**

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2017-11-18	2018-11-17
NTC-F01-006	2.0 meter Integrating Sphere	2017-11-18	2018-11-17
NTC-F01-013	Standard Lamp	2017-11-18	2018-11-17
NTC-F01-031	Digital Power Meter	2017-11-18	2018-11-17
NTC-F01-019	Temperature & Humidity Meter	2017-11-23	2018-11-22



NVLAP LAB CODE 600150-0

Report No: NTCR18050027  
Report Version: V1.1

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