

LM-79-08 Test Report

For

SHENZHEN JIANGJING LIGHTING CO., LTD.

3-5 Floor, Building A & 4-5 Floor, Building C, Aiqun Road, Tongfuyu Industrial Zone, Shangwu Community,
Shiyan Street, Bao'an District, Shenzhen City, Guangdong Province, China.

LED PANEL

Model Name(s):

PLC-35W-24-28-DM-02

PLC-40W-24-28-DM-02

PLC-45W-24-28-DM-02

PLC-50W-24-28-DM-02

Representative (Tested) Model:

PLC-50W-24-28-DM-02

Model Difference: All is the same construction, except Wattage

Prepare by:

Derek Lai

Engineer: Derek Lai

Date: 2018-07-24

Review by:

Vincent Yuan

Technical Lead: Vincent Yuan

Issue Date: 2018-07-26

Revised Date: N/A

Note:

1. The results contained in this report pertain only to the tested samples.
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3. This report does not imply product certification, approval, or endorsement by NVLAP, or any agency of the Federal Government.

Laboratory: Dongguan New Testing Centre Co., Ltd

Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan,
Guangdong, China

Tel: 86-769-89874553

Website: <http://www.ntc-cert.com>

Product Information:

Client Name:	SHENZHEN JIANGJING LIGHTING CO., LTD.
Brand Name:	JIANGJING
Model Number:	PLC-50W-24-28-DM-02
Product Type:	2x4 Luminaires for Ambient Lighting of Interior Commercial Space
Rating Input:	120-347Vac, 50/60Hz, 50W
Declared CCT:	3000K, 3500K, 4000K, 5000k
Declared Light Output:	5250 lm
LED Manufacturer:	ShenZhen JuFei Optoelectronics Co., Ltd.
LED Model:	2835 White SMD LED

Test Information:

Standard Lamp:	Total Spectral Radiant Flux Standard Lamp, trace to NIST. 1. D908S for Gonio 2. D215S for Integrating Sphere
Date of Receipt Samples:	2018-07-06
Quantity of Receipt Samples:	1
Sample Number:	180706008-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:	2018-07-26
Revised Date of Test Report:	N/A
Test Report No.:	NTCR18070091
Remark (If applicable):	N/A

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Test Specification:	
Date of Test	2018-07-18
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 C78.377-2017 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 $25\text{ }^{\circ}\text{C} \pm 1^{\circ}\text{C}$, 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 required Voltage and Frequency. It was stabilized before measurement was made. Luminous Flux, Luminaire Efficacy and Zonal Lumen were calculated from the software taken at 1° vertical intervals and 15° horizontal intervals.</p>
<p>2. Photometric and Electrical Measurements – Integrating Sphere Method:</p> <p>Photometric parameters were measured using an integrating sphere, as spectroradiometer and software. The ambient temperature condition inside the sphere was measured at $25\text{ }^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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 require Voltage and Frequency. 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 1 nm intervals over the rage 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 requirement Voltage and Frequency, and was stabilized before measurement. The Total Harmonic Distortion was calculated from the Digital Power Meter.</p>

Integrating Sphere Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
24.4	40.9	Face Down	90	10

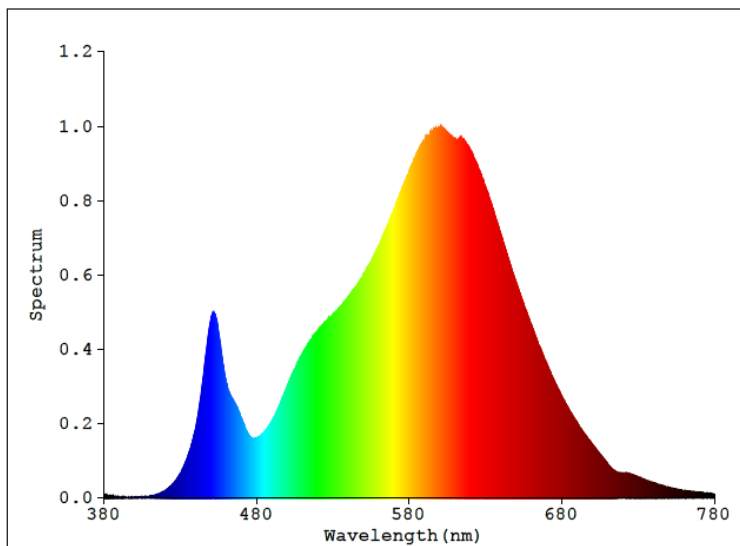
Electrical Data:

Model Number	CCT(K)	Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
PLC-50W-24-28-DM-02	3000	120.0	60	0.4066	48.44	0.9922
	3500	120.0	60	0.4191	48.88	0.9924
	4000	120.0	60	0.4162	49.56	0.9923
	5000	120.0	60	0.4114	49.02	0.9923

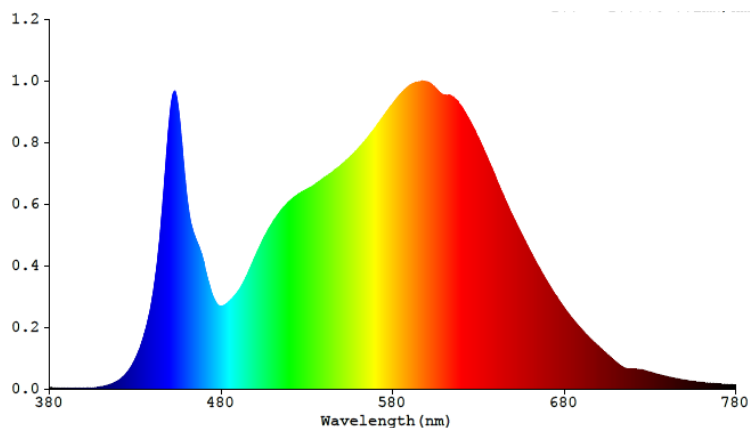
Color Data:

Model Number	CCT(K)	Color Rendering Index (CRI)	R9	Duv	Total Luminous (lm)	Luminous Efficacy (lm/w)
PLC-50W-24-28-DM-02	2936	81.4	3	0.00134	5468.74	112.90
	3629	85.2	18	-0.000282	5528.80	113.11
	4222	85.5	20	-0.0000620	5680.00	114.62
	4752	82.2	5	0.00232	5793.77	118.20

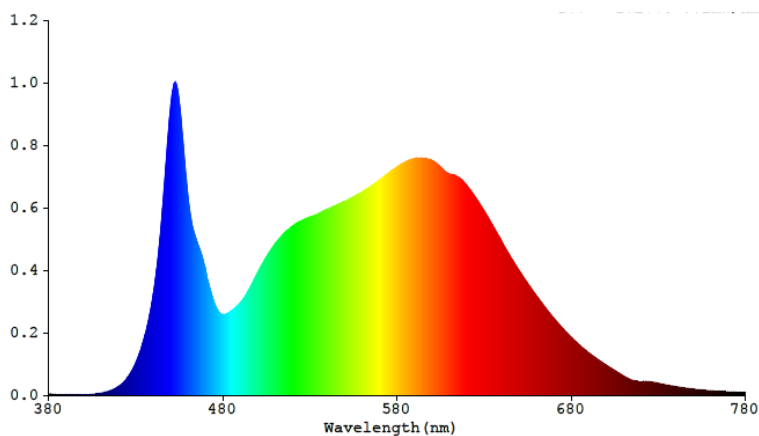
Spectrum Diagram (3000K):



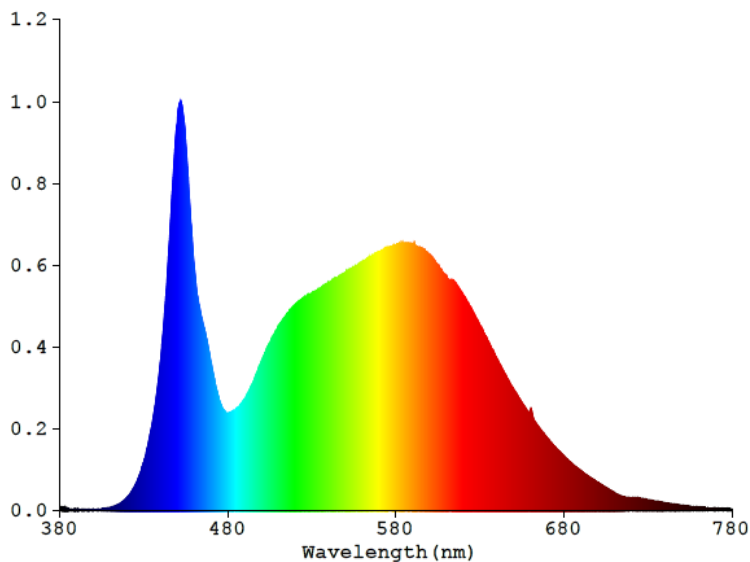
Spectrum Diagram (3500K):



Spectrum Diagram (4000K):



Spectrum Diagram (5000K):



Integrating Sphere Test Results:

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
24.5	40.4	Face Down	90	10

Electrical Data:

Model Number	CCT(K)	Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
PLC-35W-24-28-DM-02	3000	120.0	60	0.289	34.26	0.9874
	3500	120.0	60	0.2913	34.52	0.9876
	4000	120.0	60	0.291	34.48	0.9875
	5000	120.0	60	0.2891	34.28	0.9875

Color Data:

Model Number	CCT(K)	Color Rendering Index (CRI)	R9	Duv	Total Luminous (lm)	Luminous Efficacy (lm/w)
PLC-35W-24-28-DM-02	2934	81.7	4	0.00132	4080.59	119.01
	3615	85.4	19	-0.000367	4156.60	120.40
	4220	85.7	21	-0.0000414	4221.00	122.41
	4755	82.3	5	0.00238	4282.90	124.94

Goniophotometer Test Results (Test for PLC-50W-24-28-DM-02):

Test Condition:

Test Ambient (°C)	Test Humidity (%)	Orientation	Stabilization Time (minute)	Test Time (minute)
24.4	40.1	Face Down	90	25

Electrical Data:

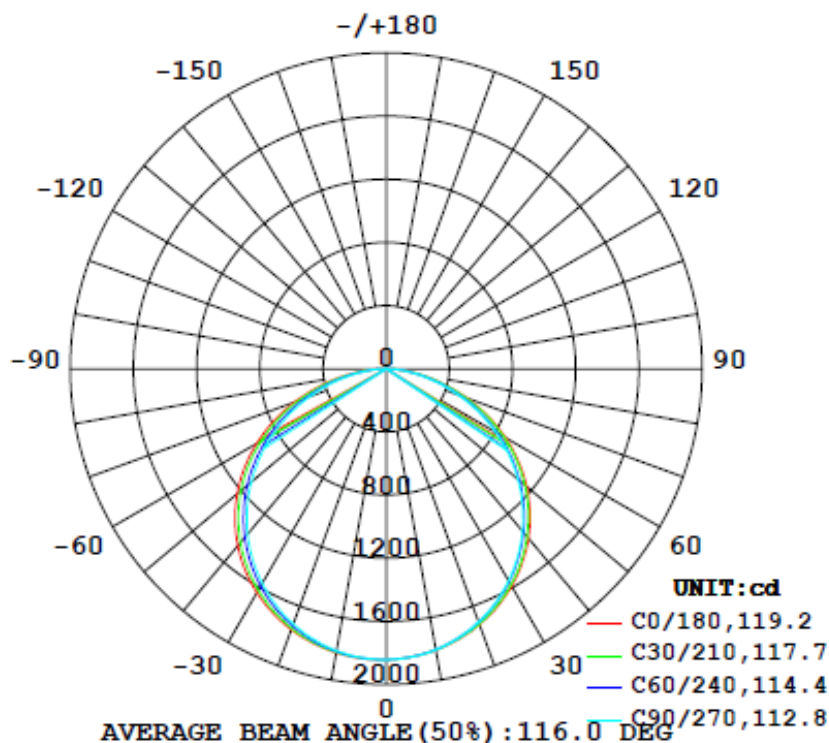
Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor
120.0	60	0.4066	48.44	0.9922

Goniophotometer Data:

Parameter	Results
Total Luminous (lm)	5468.74
Total Luminous per foot (lm/t)	N/A
Luminous Efficacy (lm/w)	112.90
Spacing Criterion (0-180°)	1.26
Spacing Criterion (90-270°)	1.32
Zonal Lumens Distribution (0-60°)	78.0%
Beam Angle (°)	116.0

Luminous Intensity Distribution Diagram:

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM

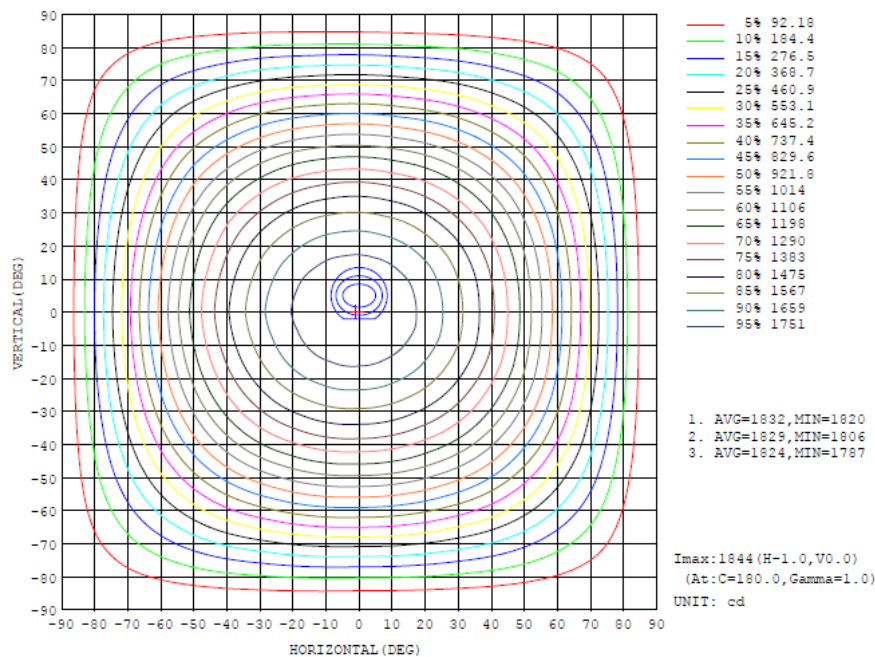


Zonal Flux Diagram:

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	Σlum, lamp
10	1808	1807	1806	1815	1826	1819	1813	1811	0~ 10	174.4	174.4	2.19,2.19
20	1725	1715	1707	1732	1757	1740	1721	1722	10~ 20	501.7	676.1	12.4,12.4
30	1588	1568	1550	1592	1638	1604	1570	1578	20~ 30	766.7	1443	26.4,26.4
40	1401	1371	1342	1398	1463	1414	1366	1382	30~ 40	935.5	2378	43.5,43.5
50	1161	1125	1089	1155	1232	1174	1116	1137	40~ 50	984.0	3362	61.5,61.5
60	871.6	837.8	798.1	865.7	947.1	885.5	828.8	848.5	50~ 60	901.4	4264	78,78
70	542.6	519.5	486.5	542.4	618.1	569.5	515.1	529.3	60~ 70	694.2	4958	90.7,90.7
80	219.1	212.3	192.5	230.0	279.9	249.2	212.3	217.3	70~ 80	400.3	5358	98,98
90	4.252	0.0522	5.345	0.0559	16.86	10.53	0.2914	5.883	80~ 90	107.3	5466	99.9,99.9
100	0.1896	0.1230	0.1172	0.1292	0.4244	0.4192	0.4224	0.4418	90~100	0.5298	5466	100,100
110	0.3349	0.1597	0.1720	0.2137	0.4284	0.4275	0.4429	0.4537	100~110	0.3278	5466	100,100
120	0.5196	0.2309	0.2628	0.3283	0.4214	0.4141	0.4058	0.4224	110~120	0.3284	5467	100,100
130	0.6804	0.3678	0.3864	0.4718	0.6692	0.6494	0.6451	0.5959	120~130	0.4003	5467	100,100
140	0.7696	0.4826	0.4913	0.5468	0.7796	0.7121	0.8476	0.6598	130~140	0.4689	5468	100,100
150	0.8060	0.5474	0.4753	0.5796	0.8994	0.9512	0.9441	0.9472	140~150	0.4390	5468	100,100
160	0.9160	0.6599	0.5129	0.6941	1.042	0.9975	0.9792	0.9911	150~160	0.3669	5468	100,100
170	1.050	0.9262	0.7236	0.8971	1.086	1.109	0.8807	0.9738	160~170	0.2491	5469	100,100
180	1.089	1.082	1.001	0.9338	1.091	1.091	1.018	0.9414	170~180	0.0940	5469	100,100
DEG	LUMINOUS INTENSITY:cd Less than 95% Percent = 13.5 %									UNIT:lm		

Isocandela Diagram:



Luminous Distribution Intensity Data:

Table--1

UNIT: cd

C(°)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
γ (°)	0	1842	1842	1842	1842	1841	1841	1841	1842	1841	1841	1838	1842	1842	1842	1842	1841	1841	1841
5	1832	1833	1831	1832	1831	1832	1832	1835	1835	1836	1837	1836	1841	1838	1839	1837	1837	1835	1836
10	1808	1810	1808	1807	1805	1805	1806	1810	1811	1815	1818	1818	1826	1823	1821	1819	1818	1814	1813
15	1773	1774	1770	1768	1765	1764	1764	1770	1774	1782	1786	1789	1799	1795	1792	1786	1782	1777	1774
20	1725	1725	1720	1715	1710	1707	1707	1715	1721	1732	1741	1747	1757	1752	1749	1740	1733	1724	1721
25	1664	1665	1656	1649	1639	1636	1636	1644	1653	1669	1681	1690	1704	1697	1691	1678	1668	1657	1652
30	1588	1591	1579	1568	1556	1552	1550	1561	1573	1592	1608	1621	1638	1628	1620	1604	1590	1575	1570
35	1501	1505	1490	1476	1461	1453	1451	1464	1478	1501	1521	1537	1558	1546	1535	1515	1499	1481	1474
40	1401	1404	1387	1371	1353	1344	1342	1355	1371	1398	1422	1441	1463	1450	1437	1414	1394	1374	1366
45	1288	1292	1272	1254	1232	1223	1220	1235	1252	1283	1308	1331	1354	1340	1326	1300	1277	1255	1246
50	1161	1166	1145	1125	1103	1092	1089	1104	1122	1155	1183	1207	1232	1217	1201	1174	1149	1126	1116
55	1022	1028	1006	986	962	952	948	964	982	1015	1044	1069	1096	1079	1064	1035	1011	986	977
60	872	879	856	838	813	803	798	815	832	866	893	920	947	929	915	885	862	838	829
65	711	719	699	680	658	648	644	659	675	707	733	759	787	768	755	728	706	682	674
70	544	553	535	520	499	491	486	500	515	543	566	591	618	600	589	564	544	522	515
75	377	387	372	361	343	337	333	346	357	382	401	422	447	429	421	399	384	365	359
80	219	231	220	212	199	195	193	203	211	230	242	259	280	265	260	243	232	217	212
85	81.7	90.4	86.4	82.5	77.8	75.4	75.0	80.4	86.0	95.1	103	112	128	117	115	105	97.3	89.1	84.5
90	4.25	0.05	6.28	0.05	5.60	0.05	5.34	0.05	7.04	0.06	4.86	1.04	16.9	13.0	4.69	10.5	2.26	4.99	0.29
95	0.12	0.09	0.09	0.09	0.09	0.08	0.08	0.08	0.09	0.09	0.09	0.08	0.34	0.35	0.34	0.35	0.34	0.35	0.35
100	0.19	0.13	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.13	0.13	0.12	0.42	0.42	0.41	0.42	0.42	0.42	0.42
105	0.26	0.17	0.15	0.15	0.15	0.15	0.15	0.15	0.16	0.17	0.17	0.16	0.47	0.46	0.44	0.45	0.45	0.46	0.46
110	0.33	0.20	0.17	0.16	0.17	0.17	0.17	0.19	0.20	0.21	0.21	0.21	0.43	0.43	0.42	0.43	0.43	0.44	0.44
115	0.43	0.25	0.21	0.18	0.17	0.20	0.21	0.23	0.25	0.27	0.27	0.28	0.38	0.39	0.39	0.39	0.40	0.41	0.41
120	0.52	0.33	0.27	0.23	0.22	0.25	0.26	0.29	0.32	0.34	0.35	0.37	0.42	0.39	0.37	0.41	0.40	0.40	0.41
125	0.61	0.43	0.33	0.30	0.28	0.29	0.33	0.35	0.38	0.42	0.42	0.45	0.59	0.55	0.53	0.52	0.49	0.48	0.49
130	0.68	0.51	0.41	0.37	0.36	0.37	0.39	0.41	0.46	0.47	0.48	0.52	0.67	0.63	0.64	0.65	0.61	0.64	0.65
135	0.74	0.58	0.48	0.43	0.42	0.44	0.46	0.47	0.51	0.51	0.53	0.58	0.74	0.71	0.63	0.76	0.76	0.68	0.67
140	0.77	0.65	0.55	0.48	0.45	0.48	0.49	0.50	0.53	0.55	0.56	0.63	0.78	0.76	0.78	0.71	0.83	0.85	0.85
145	0.79	0.71	0.59	0.51	0.47	0.48	0.50	0.50	0.55	0.56	0.58	0.66	0.84	0.80	0.83	0.82	0.78	0.92	0.92
150	0.81	0.75	0.61	0.55	0.47	0.48	0.48	0.49	0.55	0.58	0.59	0.69	0.90	0.74	0.87	0.95	0.88	0.86	0.84
155	0.84	0.82	0.71	0.59	0.52	0.54	0.50	0.53	0.59	0.61	0.65	0.74	0.96	0.86	0.95	0.95	0.98	1.00	0.99
160	0.92	0.91	0.78	0.66	0.56	0.57	0.51	0.58	0.64	0.68	0.74	0.83	1.04	1.04	0.87	1.00	0.98	1.00	0.98
165	0.98	0.99	0.90	0.77	0.64	0.63	0.58	0.64	0.72	0.78	0.85	0.90	1.05	1.09	0.97	0.94	0.98	0.94	0.91
170	1.05	1.07	1.02	0.93	0.78	0.76	0.72	0.75	0.84	0.90	0.93	0.98	1.09	1.13	1.13	1.11	0.97	0.90	0.88
175	1.09	1.12	1.09	1.06	0.95	0.95	0.90	0.89	0.94	0.92	0.95	0.99	1.11	1.15	1.13	1.11	1.09	1.01	1.01
180	1.09	1.11	1.10	1.08	1.04	1.03	1.00	0.96	0.92	0.93	0.96	1.00	1.09	1.11	1.11	1.09	1.06	1.04	1.02

Table--2

UNIT: cd

C(°)	285	300	315	330	345														
γ (°)	0	1841	1842	1841	1841	1838													
5	1835	1834	1833	1833	1829														
10	1810	1811	1811	1810	1807														
15	1771	1773	1773	1775	1772														
20	1717	1719	1722	1726	1724														
25	1648	1653	1657	1664	1664														
30	1565	1572	1578	1588	1590														
35	1469	1478	1486	1500	1504														
40	1361	1372	1382	1398	1405														
45	1242	1253	1266	1284	1292														
50	1112	1124	1137	1158	1166														
55	972	984	998	1019	1028														
60	823	836	849	870	878														
65	668	680	691	711	719														
70	509	520	529	547	553														
75	353	362	368	383	387														
80	206	213	217	227	229														
85	79.6	83.0	85.1	89.5	90.9														
90	6.42	0.24	5.88	0.26	6.60														
95	0.36	0.36	0.37	0.37	0.37														
100	0.43	0.43	0.44	0.45	0.45														
105	0.47	0.48	0.48	0.48	0.50														
110	0.45	0.45	0.45	0.45	0.47														
115	0.41	0.41	0.41	0.41	0.44														
120	0.40	0.40	0.42	0.45	0.51														
125	0.48	0.48	0.43	0.54	0.61														
130	0.62	0.51	0.60	0.53	0.68														
135	0.64	0.71	0.71	0.72	0.75														
140	0.79	0.82	0.66	0.78	0.73														
145	0.86	0.76	0.89	0.88	0.70														
150	0.87	0.96	0.95	0.92	0.91														
155	0.97	0.98	0.97	0.92	0.97														
160	0.96	0.97	0.99	0.87	1.06														
165	0.94	0.86	0.87	1.04	1.06														
170	0.86	0.91	0.97	1.04	1.06														
175	0.93	0.85	0.97	0.98	1.03														
180	0.97	0.93	0.94	0.96	1.00														

THD and PF Measurement Test Results:

Electrical Measurement:

Voltage (V)	Frequency (Hz)	Current (A)	Wattage (W)	Power Factor	iTHD(%)
277.0	60	0.1487	49.28	0.9552	11.63
277.0	60	0.1354	44.30	0.9426	11.86
277.0	60	0.1226	39.65	0.9320	12.48
277.0	60	0.1089	34.86	0.9258	12.81
347.0	60	0.1574	50.20	0.9189	11.89
347.0	60	0.1423	45.03	0.9119	12.36
347.0	60	0.1261	40.20	0.9187	13.89
347.0	60	0.1100	35.11	0.9199	13.62

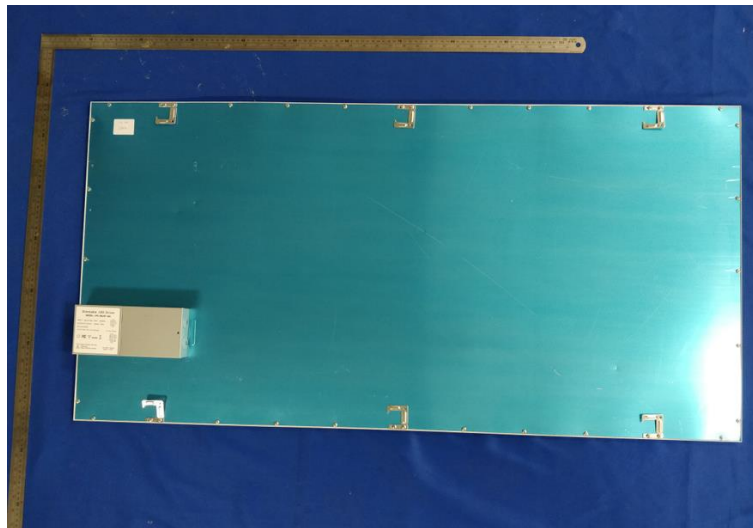
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Photo of Sample:



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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-F01-012	Standard Lamp	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