LM-79-08 Test Report

For

JIANGMEN HHHLED LIGHTING CO.,LTD

(Brand Name: HHHLED)

4th Building, #46 GaoXin East Rd., JiangHai District, JiangMen City, GuangDong Province, China

2x4 Luminaires for Ambient Lighting of Interior Commercial Spaces

Model name(s): HFPL24D-50-XX-XX-ST-S

Remark: The second "XX" can be any letters to represents model color.

Representative (Tested) Model: HFPL24D-50-XX-WH-ST-S(0%,3500K)

Model Different: N/A

Test & Report By:

Garman Mo

Engineer: Garman Mo

Review By:

Johnson Sun

Manager: Johnson Sun

Date: Jan.09,2020

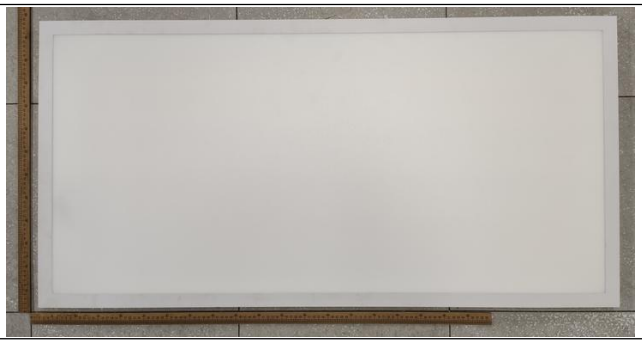
Note: 1.The results contained in this report pertain only to the tested samples.

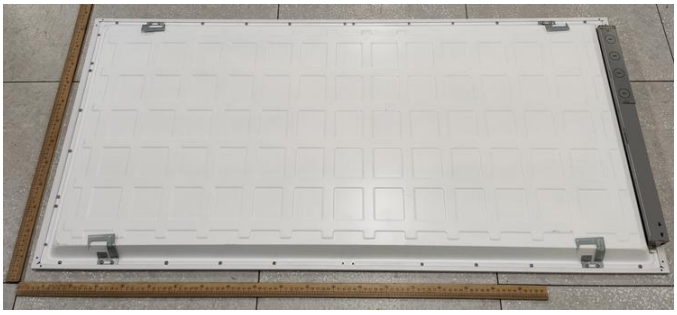
2.This report does not imply product certification, approval, or endorsement by A2LA, or any agency of the Federal Government.

1.1 Product Information:

Organization Name	JIANGMEN HHHLED LIGHTING CO.,LTD	
Brand Name	HHHLED	
Model Number	HFPL24D-50-XX-XX-ST-S	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	2x4 Luminaires for Ambient Lighting of Interior Commercial Spaces	
Rated Voltage / Frequency	120-277Vac, 50/60Hz	
Nominal Power	50W	
Rated Initial Lamp Lumen	--	
Declared CCT	3500K,4000K,5000K	
LED Manufacturer	Samsung Electronics Co., LTD.	
LED Model	SPMWHR22xxx5xxxxxx	
Sample Number	JDE190807-M1	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo





1.2 Test Specifications:

Date of Receipt	Dec.18,2019
Date of Test	Dec.23,2019
Test item	1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Electrical Parameters
Reference Standard	1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems

1.3 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer 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 or rated 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° horizontal intervals.
2) Electrical Measurements: Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25º C ± 1º C. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

2.1 Electrical, Photometric and Chromaticity Measurements

Test date	2019-12-23	Test Ambient:	25±1 ° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	HFPL24D-50-XX-WH-ST-S(0%,3500K)	Total Operating Time (min)	90

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JDE190807-M1	120.0	60	0.4244	50.28	0.9870	8.10
	277.1	60	0.1956	49.06	0.9051	6.90
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Photometric Measurement – Goniophotometer Method(Test Distance: 26.000m):

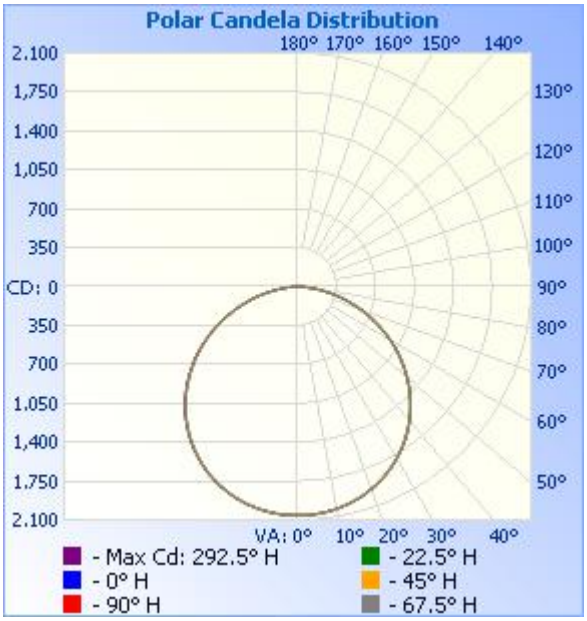
Parameter	Result		DLC V4.4 Pass Criteria	
Test Voltage (V)	120.0	277.1	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	6136.3	6141.3	>=3000 (-10%)	
Luminous Efficacy (lm/W)	122.04	125.17	Standard: >= 100(-3%)	Premium: >= 125(-3%)
Zonal lumens in the 0-60° zone (%)	77.9	--	>= 75(-3)	
SC: 0-180° (if applicable)	1.30	--	1.0-2.0(±0.1)	
SC: 90-270° (if applicable)	1.30	--	1.0-2.0(±0.1)	
Beam Angle (°)	115.9	--	--	
Center Beam Candle Power (cd)	2059	--	--	

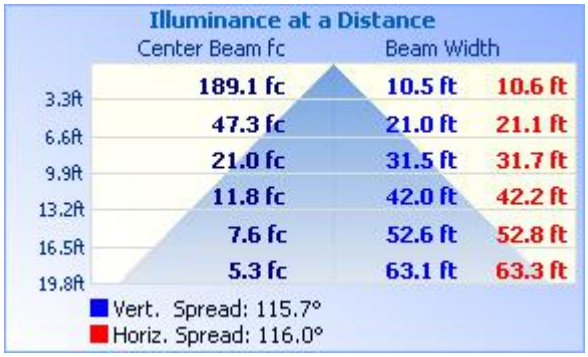
Zonal Lumen Tabulation

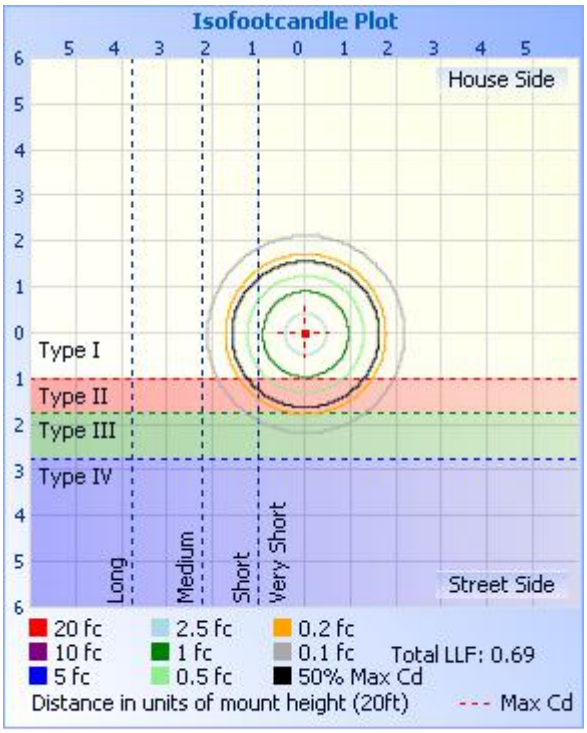
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,619.5	26.4%
0-40	2,671.9	43.5%
0-60	4,782.8	77.9%
60-90	1,341.9	21.9%
70-100	572.6	9.3%
90-120	6.2	0.1%
0-90	6,124.7	99.8%
90-180	11.0	0.2%
0-180	6,135.7	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	195.1	3.2%	90-100	2.3	0%
10-20	562.5	9.2%	100-110	2.1	0%
20-30	861.9	14.0%	110-120	1.8	0%
30-40	1,052.4	17.2%	120-130	1.5	0%
40-50	1,104.5	18.0%	130-140	1.2	0%
50-60	1,006.4	16.4%	140-150	0.9	0%
60-70	771.6	12.6%	150-160	0.7	0%
70-80	447.7	7.3%	160-170	0.5	0%
80-90	122.6	2.0%	170-180	0.2	0%

Photometric Data







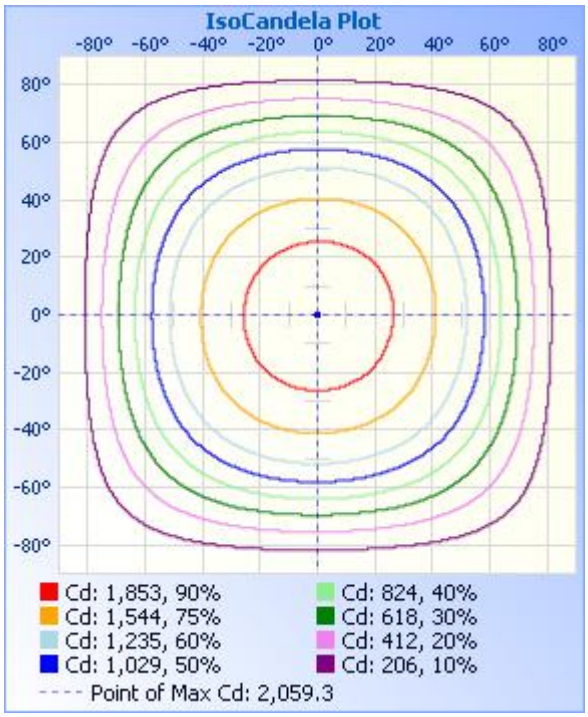


Table--1 UNIT: cd

γ (DEG) \ C(DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5		
0	2059	2059	2059	2059	2059	2059	2059	2059	2059	2059	2059	2059	2059	2059	2059	2059		
5	2052	2054	2053	2053	2051	2051	2051	2052	2051	2050	2049	2051	2051	2052	2052	2051		
10	2030	2033	2033	2031	2029	2028	2028	2029	2029	2028	2027	2028	2029	2029	2029	2028		
15	1992	1998	1997	1994	1991	1990	1990	1991	1991	1990	1989	1991	1991	1991	1991	1989		
20	1939	1946	1944	1941	1938	1936	1937	1938	1939	1938	1938	1938	1939	1937	1937	1935		
25	1870	1877	1875	1872	1869	1866	1867	1870	1870	1871	1870	1870	1870	1867	1866	1865		
30	1784	1791	1790	1786	1784	1780	1782	1785	1785	1788	1787	1785	1784	1779	1780	1778		
35	1682	1689	1688	1685	1682	1679	1681	1684	1685	1686	1686	1684	1682	1676	1677	1676		
40	1564	1571	1571	1568	1565	1562	1565	1567	1569	1574	1569	1565	1562	1557	1559	1557		
45	1432	1438	1438	1435	1433	1431	1433	1436	1438	1441	1437	1432	1428	1423	1425	1424		
50	1285	1290	1291	1290	1288	1285	1288	1291	1293	1295	1290	1285	1280	1275	1277	1277		
55	1124	1129	1132	1132	1131	1128	1131	1133	1135	1135	1130	1124	1120	1115	1117	1118		
60	952	958	961	963	963	961	962	965	967	964	960	955	950	945	947	948		
65	775	779	783	786	788	786	787	788	789	786	782	776	773	769	769	769		
70	593	596	602	607	609	608	608	607	608	605	601	597	593	590	589	589		
75	413	416	424	430	433	433	432	429	429	427	424	419	416	413	413	412		
80	241	249	259	264	266	268	266	256	256	255	256	253	250	248	247	246		
85	94.0	99.8	107	115	117	118	111	106	104	102	102	105	103	102	97.8	96.3		
90	5.16	5.34	4.98	4.72	5.30	7.02	7.72	7.42	6.93	5.19	3.71	2.96	3.11	3.55	4.20	4.93		
95	1.47	1.48	1.84	2.35	2.45	2.39	1.83	1.58	1.42	1.31	1.63	2.51	2.66	2.49	1.88	1.37		
100	1.36	1.42	1.84	2.30	2.45	2.28	1.72	1.47	1.47	1.31	1.79	2.40	2.65	2.49	1.93	1.47		
105	1.57	1.73	2.04	2.40	2.50	2.34	1.82	1.52	1.68	1.53	1.84	1.98	2.55	2.13	1.93	1.79		
110	1.68	1.79	2.31	2.35	2.60	2.29	1.93	1.68	1.78	1.68	1.84	1.72	1.93	1.71	1.93	1.73		
115	2.04	1.95	2.36	1.78	2.09	1.87	2.14	1.89	1.78	1.79	1.84	1.09	1.66	1.39	1.77	1.73		
120	2.05	2.00	2.36	1.25	1.51	1.30	2.30	2.00	1.78	1.79	1.78	0.99	1.20	0.99	1.78	1.63		
125	2.10	2.00	2.31	1.25	1.41	1.20	2.14	2.00	1.78	1.79	1.78	0.99	1.15	1.04	1.46	1.63		
130	2.10	2.00	1.89	1.25	1.41	1.20	1.93	2.00	1.78	1.68	1.21	1.04	1.25	1.14	1.41	1.63		
135	2.10	2.00	1.52	1.15	1.41	1.20	1.67	2.00	1.78	1.68	1.00	1.30	1.35	1.30	1.15	1.63		
140	2.10	1.89	1.16	1.15	1.41	1.20	1.25	2.00	1.78	1.63	1.00	1.36	1.61	1.40	1.10	1.79		
145	1.78	1.47	1.00	1.15	1.41	1.20	0.89	1.68	1.78	1.63	1.05	1.62	1.77	1.71	1.31	1.68		
150	1.78	1.53	1.00	1.25	1.46	1.20	0.89	1.63	1.78	1.63	1.31	1.72	1.93	1.87	1.51	1.26		
155	1.63	1.31	1.05	1.51	1.51	1.35	0.89	1.42	1.78	1.58	1.26	1.67	1.98	1.92	1.67	1.26		
160	1.52	1.16	1.26	1.57	1.61	1.51	0.94	1.37	1.84	1.63	1.26	1.67	1.98	2.03	1.88	1.42		
165	1.47	1.10	1.42	1.67	1.61	1.61	1.10	1.26	1.89	1.79	1.31	1.67	1.98	2.03	1.93	1.63		
170	1.68	1.10	1.63	1.72	1.87	1.71	1.46	1.31	1.89	1.74	1.47	1.67	1.98	2.03	1.93	1.73		
175	1.68	1.21	1.68	1.83	1.93	1.82	1.62	1.68	1.84	1.68	1.31	1.67	1.98	2.03	1.83	1.63		
180	1.68	1.21	1.68	1.83	2.03	1.82	1.57	1.37	1.84	1.68	1.21	1.67	1.82	2.03	1.83	1.58		

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-355	Goniophotometer system	Verified by D908S standard lamp	
ST-R-359	Standard Lamp	2019-07-09	2020-07-08
ST-R-358	Power Meter for Goniophotometer	2019-06-27	2020-06-26
ST-R-354	hygrothermograph for Goniophotometer	2019-06-28	2020-06-27
Expand Uncertainty: Photometric Measurement(Goniophotometer):3.38%, k=2			

****** END OF REPORT ******