



DesignLights Consortium Test Report

Reference Standards

UL1598-2008

ANSI C82.77-10-2014

IES LM-79-2008

Prepared For

Jiangsu Ever-tie Lighting Inc

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Test Laboratory:

UL-CCIC Company Limited

Test Laboratory Address:

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Catalog Number

ETLDI01B-24/NH/45/YDM/CCT/APP 830(A3+B3)

Project Number

4790409923

Report Number

4790409923_25

Test Date

2022-06-07~2022-06-15

Issue Date

2022-06-20

Revision Date

N/A

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Approved By

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Test Summary

DLC Technical Requirements V5.1- issued 2020-02-14

Requirement Category	Test Method	Requirements	Tolerance	Test Result
Minimum Light Output (lm)-Luminaires	IES LM-79-2008	≥3000	-10%	5800.3
Minimum Luminaire Efficacy (lm/W)-Luminaires	IES LM-79-2008	≥110	-3%	124.98
Spacing Criteria (0-180°)	IES LM-79-2008	1.0-2.0	±0.1	1.24
Spacing Criteria (90-270°)	IES LM-79-2008	1.0-2.0	±0.1	1.26
Zonal Lumen Requirement 1(0°-60°)	IES LM-79-2008	≥75%	-3%	76.30%
Allowable CCT (3000K)	IES LM-79-2008/ANSI C78.377-2015	3045±175	N/A	3062
Allowable CCT (3500K)	IES LM-79-2008/ANSI C78.377-2015	3465±245	N/A	3538
Allowable CCT (4000K)	IES LM-79-2008/ANSI C78.377-2015	3985±275	N/A	3977
Allowable CCT (5000K)	IES LM-79-2008/ANSI C78.377-2015	5029±283	N/A	4989
Minimum CRI	IES LM-79-2008/CIE 13.3-1995	≥80	-1	82
Minimum R9	IES LM-79-2008	≥0	-1	3.0
Minimum Rg	IES LM-79-2008	≥89	-1	94
Minimum Rf	IES LM-79-2008	≥70	-1	82
Rcs,h1	IES LM-79-2008	-12%-23%	-1%	-12%
Unified Glare Rating (UGR)	IES LM-79-2008	≤22	N/A	21.8
L70 Lumen maintenance (Hours)	N/A	≥50000	N/A	≥50000
L90 Lumen maintenance (Hours)	N/A	≥36000	N/A	≥36000
Power Factor	ANSI C82.77-10-2014	≥0.9	-0.03	0.9712
Total Harmonic Distortion (A%)	ANSI C82.77-10-2014	≤20%	5%	5.75%
In-Situ Temperature Measurement Test for LED 1 (°C)	UL1598-2008	≤105	N/A	47.5
In-Situ Temperature Measurement Test for Driver 1 (°C)	UL1598-2008	≤90	N/A	62.6
Max Chromaticity Shift (1000-6000h)	N/A	≤0.004	0.0004	0.0024
Minimum Luminaire Warranty (Years)	N/A	≥5	N/A	≥5



Test List

Sample Received Date: 2022-06-06

Test Item	Test Date	Model Number	Tests Conducted By
Integrating Sphere Test	2022-06-12	ETLDI01B-24/NH/45/YDM/CCT/APP 830(A3+B3)	Yang, Gavin X
Integrating Sphere Test	2022-06-12	ETLDI01B-24/NH/45/YDM/CCT/APP 835(A3+B3)	Yang, Gavin X
Integrating Sphere Test	2022-06-12	ETLDI01B-24/NH/45/YDM/CCT/APP 840(A3+B3)	Yang, Gavin X
Integrating Sphere Test	2022-06-12	ETLDI01B-24/NH/45/YDM/CCT/APP 850(A3+B3)	Yang, Gavin X
Goniophotometer Test	2022-06-07	ETLDI01B-24/NH/45/YDM/CCT/APP 830(A3+B3)	Yang, Gavin X
Goniophotometer Test	2022-06-07	ETLDI01B-24/NH/45/YDM/CCT/APP 850(A3+B3)	Yang, Gavin X
THD and PF Test	2022-06-07	ETLDI01B-24/NH/45/YDM/CCT/APP 830(A3+B3)	Yang, Gavin X
THD and PF Test	2022-06-07	ETLDI01B-24/NH/45/YDM/CCT/APP 835(A3+B3)	Yang, Gavin X
THD and PF Test	2022-06-07	ETLDI01B-24/NH/45/YDM/CCT/APP 840(A3+B3)	Yang, Gavin X
THD and PF Test	2022-06-07	ETLDI01B-24/NH/45/YDM/CCT/APP 850(A3+B3)	Yang, Gavin X
In-Situ Temperature Measurement Test	2022-06-15	ETLDI01B-24/NH/45/YDM/CCT/APP 830(A3+B3)	Yang, Gavin X

Remark (if any)

1. UL test equipment information is recorded on Meter Use in UL's Aurora database.
2. The accuracy method decision rule is applied when the compliance or verdict is made to the results of this report.



Product Description

Lamp/Luminaire Description: 2x4 Luminaires for Ambient Lighting of Interior Commercial Spaces

Model Number: ETLDI01B-24/NH/45/YDM/CCT/APP 830(A3+B3)

Electrical Parameter: 120-277V, 50/60Hz

LED Package: STW8A2PD-XX

Dimming Information: Continuous dimming capability

Products Scaled Value

Model Number	CCT	Luminous Flux	Power	Luminous Efficacy
ETLDI01B-24/NH/45/YDM/CCT/ APP 830(A3+B3)	3000K	5625	45	125
ETLDI01B-24/NH/45/YDM/CCT/ APP 835(A3+B3)	3500k	5670	45	126
ETLDI01B-24/NH/45/YDM/CCT/ APP 840(A3+B3)	4000k	5715	45	127
ETLDI01B-24/NH/45/YDM/ CCT/APP 850(A3+B3)	4000k	5760	45	128





Integrating Sphere Test

Model No.	ETLDI01B-24/NH/45/YDM/CCT/APP 830(A3+B3)	Sample ID.	5016347
Operate time (Min.)	90	Stabilization time (Min.)	45

Test Method

1. The sample was tested according to the IES LM-79-2008, and the product is assume to be brand new without seasoning.

2. Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The reference standard lamp is rated current 2.679A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.

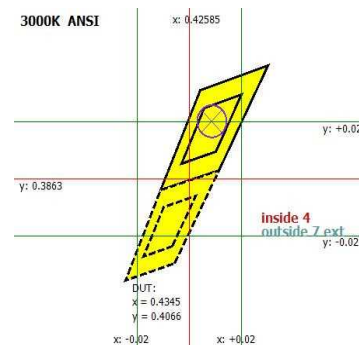
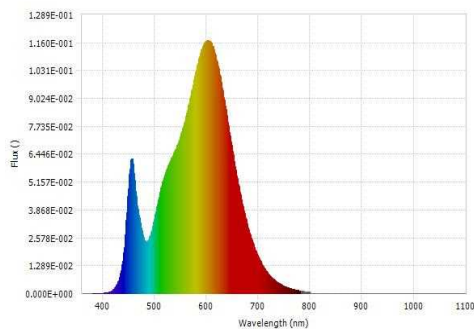
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions was using 4π geometry. The self-absorption factor is applied in the final test result. The sample was operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.

Integrating Sphere Test Conditions

Temperature ($^{\circ}\text{C}$)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
24.8	120.06	60	0.3877	46.379	0.9964	Horizontal

Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
3062	82	3.0	0.0014	5838.31	125.88	N/A



Luminous Flux (lm)	5838.31	Chrom x	0.4345
Chrom y	0.4066	Chrom u	0.2479
Chrom v	0.3480	Duv	0.0014
Chrom u'	0.2479	Chrom v'	0.5220
CCT (K)	3062	Luminous Efficacy (lm/W)	125.88
Ra	82	R1	80.0
R2	91.0	R3	96.0
R4	79.0	R5	80.0
R6	88.0	R7	82.0
R8	58.0	R9	3.0
R10	78.0	R11	77.0
R12	66.0	R13	83.0
R14	99.0	R15	72.0
Rf	84	Rg	94
Rcs,h1	-12%		



Integrating Sphere Test (Cont'd)

TM-30 Report

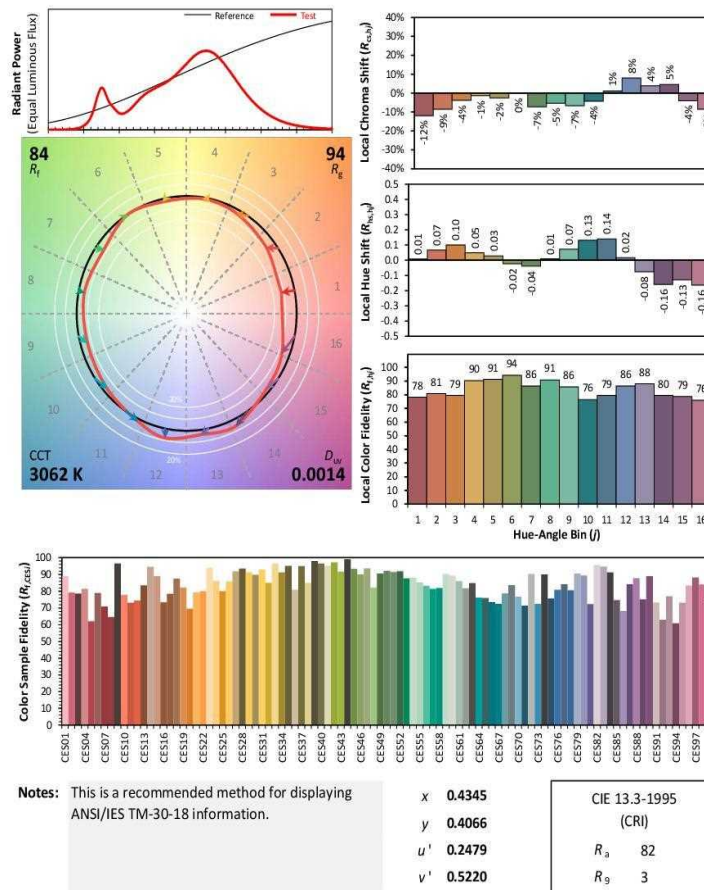
ANSI/IES TM-30-18 Color Rendition Report

Source: STW8A2PD-XX

Date: 6/12/2022

Manufacturer: Jiangsu Ever-tie Lighting Inc

Model: ETLDI018-24/NH/45/YDM/CCT/APP
830(A3+B3)



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Integrating Sphere Test

Model No.	ETLDI01B-24/NH/45/YDM/CCT/APP 835(A3+B3)	Sample ID.	5016347
Operate time (Min.)	90	Stabilization time (Min.)	45

Test Method

1. The sample was tested according to the IES LM-79-2008, and the product is assume to be brand new without seasoning.

2. Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The reference standard lamp is rated current 2.679A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.

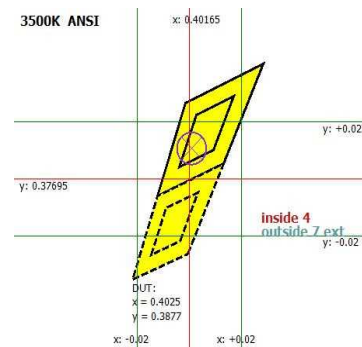
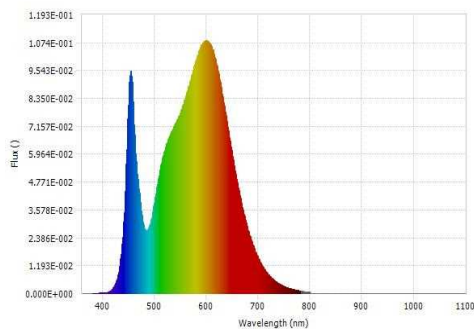
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions was using 4π geometry. The self-absorption factor is applied in the final test result. The sample was operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.

Integrating Sphere Test Conditions

Temperature ($^{\circ}\text{C}$)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
24.8	120.03	60	0.3874	46.33	0.9965	Horizontal

Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
3538	83	10.0	-0.0007	5967.71	128.81	N/A



Luminous Flux (lm)	5967.71	Chrom x	0.4025
Chrom y	0.3877	Chrom u	0.2351
Chrom v	0.3397	Duv	-0.0007
Chrom u'	0.2351	Chrom v'	0.5096
CCT (K)	3538	Luminous Efficacy (lm/W)	128.81
Ra	83	R1	82.0
R2	91.0	R3	96.0
R4	81.0	R5	82.0
R6	87.0	R7	85.0
R8	63.0	R9	10.0
R10	77.0	R11	80.0
R12	63.0	R13	84.0
R14	98.0	R15	76.0
Rf	84	Rg	95
Rcs,h1	-12%		



Integrating Sphere Test (Cont'd)

TM-30 Report

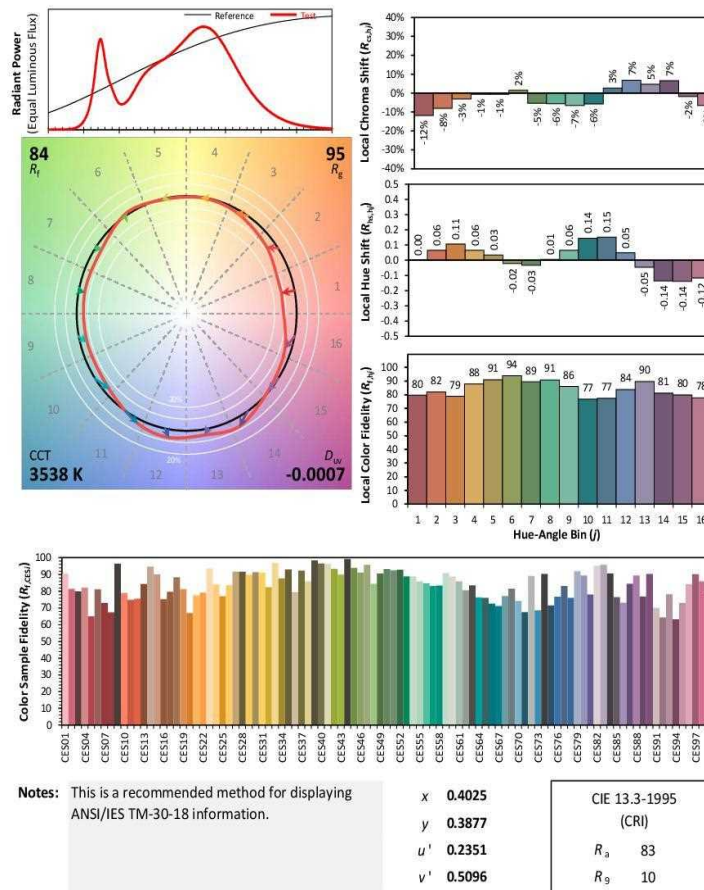
ANSI/IES TM-30-18 Color Rendition Report

Source: STW8A2PD-XX

Date: 6/12/2022

Manufacturer: Jiangsu Ever-tie Lighting Inc

Model: ETLDI018-24/NH/45/YDM/CCT/APP
835(A3+B3)



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Integrating Sphere Test

Model No.	ETLDI01B-24/NH/45/YDM/CCT/APP 840(A3+B3)	Sample ID.	5016347
Operate time (Min.)	90	Stabilization time (Min.)	45

Test Method

1. The sample was tested according to the IES LM-79-2008, and the product is assume to be brand new without seasoning.

2. Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The reference standard lamp is rated current 2.679A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.

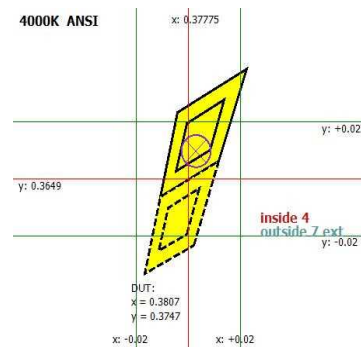
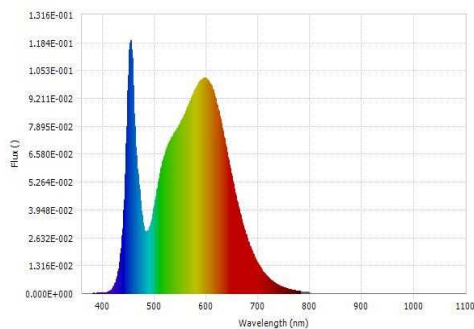
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions was using 4π geometry. The self-absorption factor is applied in the final test result. The sample was operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.

Integrating Sphere Test Conditions

Temperature ($^{\circ}\text{C}$)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
24.8	120.05	60	0.3886	46.484	0.9965	Horizontal

Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
3977	83	13.0	-0.0011	5985.41	128.76	N/A



Luminous Flux (lm)	5985.41	Chrom x	0.3807
Chrom y	0.3747	Chrom u	0.2261
Chrom v	0.3338	Duv	-0.0011
Chrom u'	0.2261	Chrom v'	0.5007
CCT (K)	3977	Luminous Efficacy (lm/W)	128.76
Ra	83	R1	82.0
R2	90.0	R3	95.0
R4	82.0	R5	82.0
R6	85.0	R7	86.0
R8	66.0	R9	13.0
R10	76.0	R11	80.0
R12	60.0	R13	85.0
R14	97.0	R15	77.0
Rf	83	Rg	95
Rcs,h1	-12%		



Integrating Sphere Test (Cont'd)

TM-30 Report

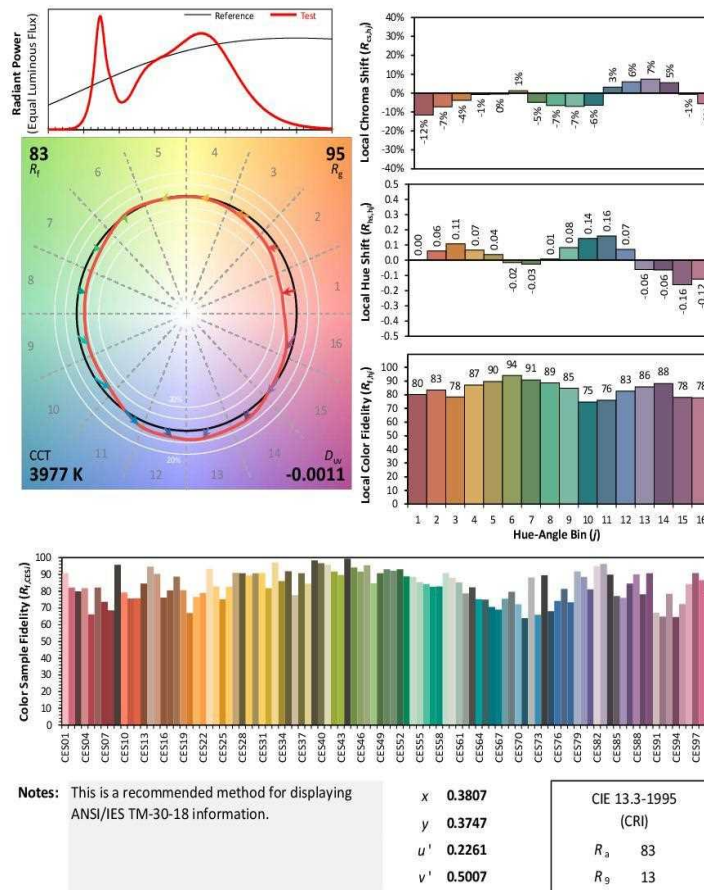
ANSI/IES TM-30-18 Color Rendition Report

Source: STW8A2PD-XX

Date: 6/12/2022

Manufacturer: Jiangsu Ever-tie Lighting Inc

Model: ETLDI018-24/NH/45/YDM/CCT/APP
840(A3+B3)



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Integrating Sphere Test

Model No.	ETLDI01B-24/NH/45/YDM/CCT/APP 850(A3+B3)	Sample ID.	5016347
Operate time (Min.)	90	Stabilization time (Min.)	45

Test Method

1. The sample was tested according to the IES LM-79-2008, and the product is assume to be brand new without seasoning.

2. Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. The reference standard lamp is rated current 2.679A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.

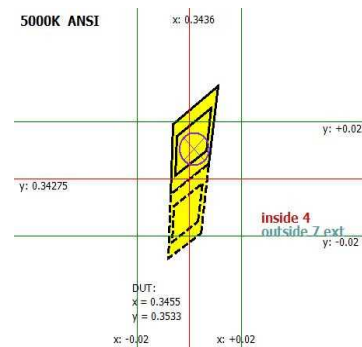
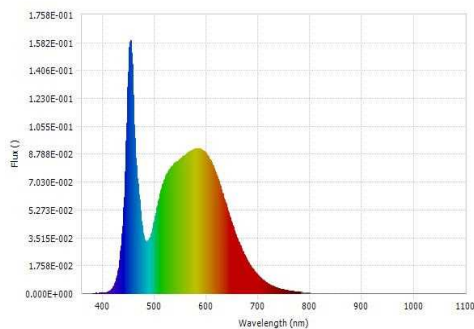
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions was using 4π geometry. The self-absorption factor is applied in the final test result. The sample was operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.

Integrating Sphere Test Conditions

Temperature ($^{\circ}\text{C}$)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
24.8	120.02	60	0.3906	46.729	0.9968	Horizontal

Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
4989	82	10.0	0.0007	5920.29	126.69	N/A



Luminous Flux (lm)	5920.29	Chrom x	0.3455
Chrom y	0.3533	Chrom u	0.2111
Chrom v	0.3237	Duv	0.0007
Chrom u'	0.2111	Chrom v'	0.4855
CCT (K)	4989	Luminous Efficacy (lm/W)	126.69
Ra	82	R1	81.0
R2	88.0	R3	92.0
R4	81.0	R5	80.0
R6	82.0	R7	88.0
R8	68.0	R9	10.0
R10	70.0	R11	79.0
R12	52.0	R13	83.0
R14	96.0	R15	76.0
Rf	82	Rg	96
Rcs,h1	-12%		



Integrating Sphere Test (Cont'd)

TM-30 Report

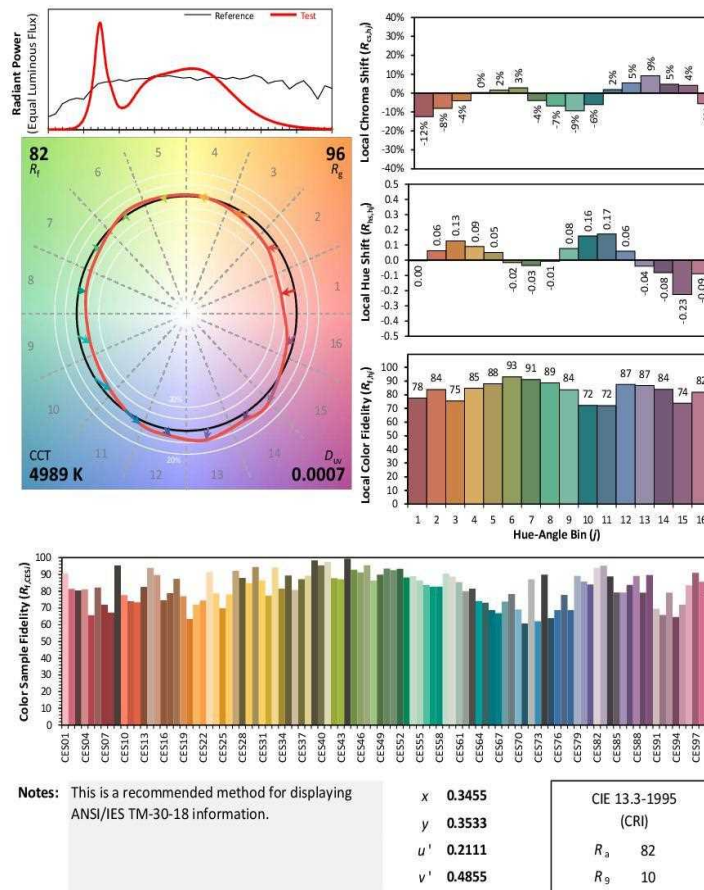
ANSI/IES TM-30-18 Color Rendition Report

Source: STW8A2PD-XX

Date: 6/12/2022

Manufacturer: Jiangsu Ever-tie Lighting Inc

Model: ETLDI018-24/NH/45/YDM/CCT/APP
850(A3+B3)



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Goniophotometer Test

Model No.	ETLDI01B-24/NH/45/YDM/CCT/APP 830(A3+B3)	Sample ID.	5016347
Operate time (Min.)	90	Stabilization time (Min.)	45

Test Method

- 1.The sample was tested according to the IES LM-79-2008, and the product is assume to be brand new without seasoning.
- 2.Photometric parameters were measured using a type C goniophotometer and software.
- 3.The ambient temperature shall be maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample. The reference standard lamp is rated current 3.8581A, 3.8558A, 3.8466A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.
- 4.The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonallumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals. Photometric distance was more than five times of the largest dimension of the test SSL product.

Goniophotometer Test Conditions

Temperature ($^{\circ}\text{C}$)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
24.5	120.08	60	0.3876	46.41	0.9972	3.86%	Horizontal

Test Results

Luminous Flux (lm)	Zonal Lumen Requirement 1	Zonal Lumen Requirement 2	Beam Angle (50%)		Luminous Efficacy (lm/W)
	$0^{\circ}\text{-}60^{\circ}$	N/A	Horizontal Spread	Vertical Spread	
5800.3	76.40%	N/A	114.3	104.6	124.98

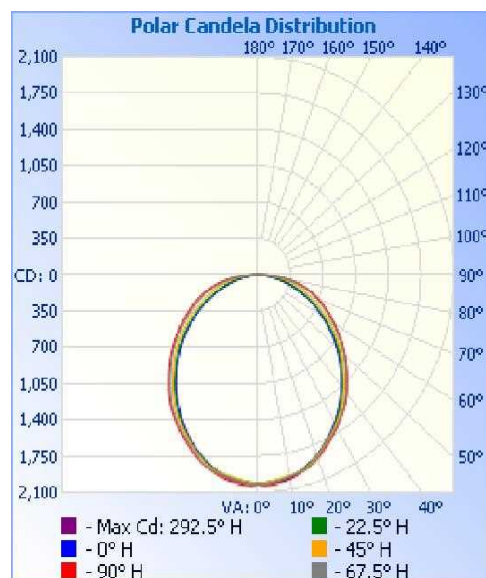
Backlight	Uplight	Glare
N/A	N/A	N/A

UGR		Spacing Criteria ($0\text{-}180^{\circ}$)	Spacing Criteria ($90^{\circ}\text{-}270^{\circ}$)
Crosswise	Endwise		
19.3	21.7	1.22	1.26

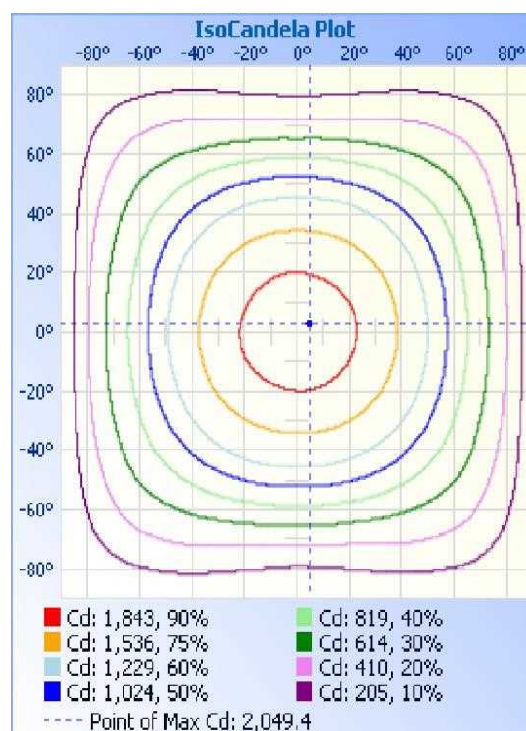


Goniophotometer Test (Cont'd)

Polar Candela Distribution



IsoCandela Plot





Goniophotometer Test (Cont'd)

Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1552.2	26.80%
0-40	2526.1	43.60%
0-60	4430.0	76.40%
60-90	1353.5	23.30%
70-100	645.7	11.10%
90-120	6.7	0.10%
0-90	5783.5	99.70%
90-180	16.8	0.30%
0-180	5800.3	100.00%

Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-5	48.3	0.80%	90-95	1.9	0.00%
5-10	143.4	2.50%	95-100	1.3	0.00%
10-15	232.8	4.00%	100-105	1.1	0.00%
15-20	312.7	5.40%	105-110	0.9	0.00%
20-25	380.2	6.60%	110-115	0.8	0.00%
25-30	434.7	7.50%	115-120	0.8	0.00%
30-35	475.0	8.20%	120-125	0.9	0.00%
35-40	498.9	8.60%	125-130	0.9	0.00%
40-45	504.8	8.70%	130-135	1.0	0.00%
45-50	495.4	8.50%	135-140	1.0	0.00%
50-55	471.2	8.10%	140-145	1.1	0.00%
55-60	432.5	7.50%	145-150	1.0	0.00%
60-65	383.3	6.60%	150-155	1.0	0.00%
65-70	327.6	5.60%	155-160	0.9	0.00%
70-75	267.5	4.60%	160-165	0.9	0.00%
75-80	201.5	3.50%	165-170	0.7	0.00%
80-85	127.8	2.20%	170-175	0.5	0.00%
85-90	45.7	0.80%	175-180	0.2	0.00%



Goniophotometer Test (Cont'd)

Intensity Data(cd)

Candela Table - Type C																	
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017	2017
1	2012	2011	2016	2030	2036	2028	2014	2013	2011	2010	2013	2030	2036	2028	2020	2017	2014
2	2014	2007	2013	2028	2038	2035	2024	2019	2012	2005	2011	2028	2039	2036	2029	2022	2013
3	2014	2003	2007	2025	2038	2042	2032	2022	2011	2001	2005	2024	2038	2044	2037	2026	2014
4	2013	1999	1999	2018	2035	2048	2038	2024	2009	1996	1998	2019	2036	2048	2042	2028	2014
5	2012	1995	1992	2012	2029	2048	2040	2024	2007	1991	1989	2012	2031	2049	2045	2029	2012
6	2008	1993	1985	2006	2024	2045	2038	2023	2004	1988	1982	2006	2026	2048	2043	2028	2009
7	2004	1990	1979	1998	2018	2040	2035	2018	1999	1983	1975	1998	2021	2042	2041	2024	2006
8	1998	1987	1972	1991	2012	2030	2029	2013	1993	1980	1969	1991	2015	2034	2034	2019	2001
9	1992	1983	1967	1983	2005	2020	2021	2004	1986	1975	1964	1983	2008	2024	2026	2011	1994
10	1985	1977	1964	1976	1998	2008	2009	1994	1978	1969	1960	1976	2002	2014	2014	2001	1985
11	1977	1970	1962	1971	1989	1995	1995	1982	1968	1962	1956	1970	1993	2001	2002	1990	1976
12	1967	1961	1958	1966	1980	1982	1980	1970	1958	1953	1952	1964	1984	1989	1988	1978	1967
13	1955	1952	1954	1960	1970	1969	1964	1955	1944	1942	1947	1959	1973	1976	1973	1964	1956
14	1940	1942	1947	1954	1958	1956	1947	1941	1931	1930	1940	1953	1963	1963	1957	1950	1942
15	1925	1929	1938	1948	1947	1942	1929	1923	1916	1918	1930	1947	1952	1949	1940	1933	1929
16	1911	1916	1926	1940	1936	1927	1912	1905	1901	1905	1918	1937	1940	1935	1924	1917	1914
17	1897	1902	1910	1929	1925	1913	1894	1888	1885	1890	1904	1926	1929	1921	1908	1900	1899
18	1882	1886	1894	1914	1913	1898	1877	1869	1868	1875	1888	1911	1918	1907	1891	1883	1883
19	1866	1871	1877	1896	1900	1884	1861	1851	1850	1860	1871	1894	1904	1893	1876	1866	1867
20	1851	1856	1860	1876	1885	1869	1845	1832	1834	1842	1852	1875	1889	1879	1860	1848	1850
25	1753	1761	1764	1778	1791	1785	1763	1739	1735	1746	1754	1776	1796	1797	1779	1760	1756
30	1647	1657	1670	1690	1699	1687	1664	1635	1623	1638	1658	1686	1704	1700	1682	1657	1647
35	1526	1540	1565	1592	1599	1580	1547	1514	1501	1519	1552	1587	1603	1594	1566	1538	1528
40	1395	1408	1432	1467	1484	1467	1424	1384	1370	1385	1418	1461	1488	1480	1444	1410	1398
45	1256	1270	1298	1337	1352	1330	1291	1247	1227	1245	1280	1327	1353	1342	1309	1274	1257
50	1110	1130	1167	1209	1221	1193	1143	1101	1079	1102	1147	1197	1220	1202	1161	1127	1110
55	953	978	1023	1072	1088	1058	997	945	924	950	1001	1057	1084	1063	1014	970	954
60	792	818	874	931	952	919	853	790	762	789	848	914	945	922	867	815	793
65	635	661	725	796	823	786	710	638	603	630	699	778	815	787	722	663	636
70	481	511	586	669	702	664	575	488	449	479	561	650	689	662	584	512	481
75	334	370	461	542	569	535	450	349	302	340	436	518	554	531	458	370	334
80	199	242	335	393	412	382	315	224	171	215	305	372	404	383	327	241	200
85	81	129	182	216	223	202	161	108	60	103	158	203	226	216	181	127	82
90	7	13	14	9	4	4	4	2	3	2	4	6	10	16	21	16	8
95	2	2	3	3	3	3	2	2	2	3	3	3	2	3	3	2	2
100	2	2	2	3	3	3	2	2	2	2	2	2	2	2	2	2	2
105	2	1	1	2	2	2	2	2	2	2	2	2	2	2	1	2	1
110	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
115	2	1	1	2	2	1	2	1	1	1	2	2	1	1	2	2	2
120	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2
125	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
130	2	2	2	2	3	2	3	3	2	2	2	2	2	2	2	2	2
135	2	3	2	2	3	3	3	3	3	3	3	2	3	2	2	3	2
140	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
145	4	3	3	4	3	4	4	3	3	4	3	3	3	3	3	3	3
150	4	4	4	4	4	4	4	3	3	3	4	3	4	4	4	4	3
155	4	4	5	4	5	5	4	4	4	4	4	4	4	4	4	4	4
160	4	4	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5
165	6	6	6	5	6	6	6	6	6	5	6	6	6	6	6	5	6
170	6	7	6	7	7	7	7	7	6	7	7	7	7	7	6	7	7
175	6	7	7	6	6	7	7	7	7	6	6	7	7	6	6	6	6
180	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7



Goniophotometer Test

Model No.	ETLDI01B-24/NH/45/YDM/CCT/APP 850(A3+B3)	Sample ID.	5016347
Operate time (Min.)	90	Stabilization time (Min.)	45

Test Method

- 1.The sample was tested according to the IES LM-79-2008, and the product is assume to be brand new without seasoning.
- 2.Photometric parameters were measured using a type C goniophotometer and software.
- 3.The ambient temperature shall be maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample. The reference standard lamp is rated current 3.8581A, 3.8558A, 3.8466A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.
- 4.The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonallumen were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals. Photometric distance was more than five times of the largest dimension of the test SSL product.

Goniophotometer Test Conditions

Temperature ($^{\circ}\text{C}$)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
24.4	120.14	60	0.3902	46.75	0.9973	3.86%	Horizontal

Test Results

Luminous Flux (lm)	Zonal Lumen Requirement 1	Zonal Lumen Requirement 2	Beam Angle (50%)		Luminous Efficacy (lm/W)
	$0^{\circ}\text{-}60^{\circ}$	N/A	Horizontal Spread	Vertical Spread	
5878.9	76.30%	N/A	114.8	105.0	125.75

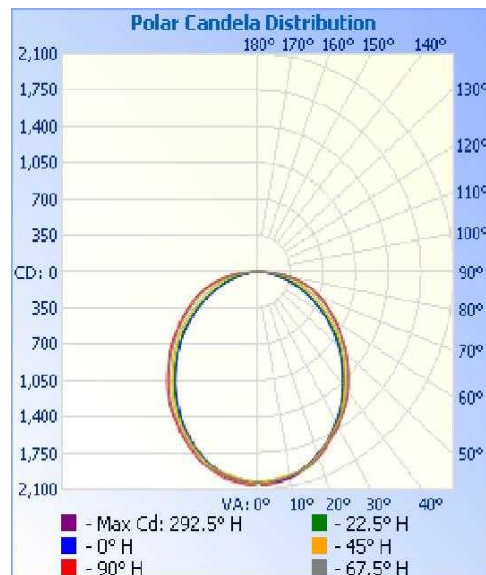
Backlight	Uplight	Glare
N/A	N/A	N/A

UGR		Spacing Criteria ($0\text{-}180^{\circ}$)	Spacing Criteria ($90^{\circ}\text{-}270^{\circ}$)
Crosswise	Endwise		
19.4	21.8	1.24	1.26

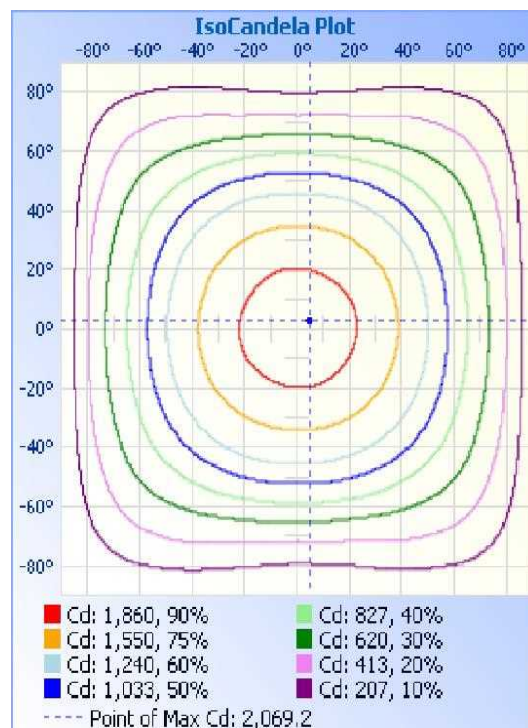


Goniophotometer Test (Cont'd)

Polar Candela Distribution



IsoCandela Plot





Goniophotometer Test (Cont'd)

Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1569.2	26.70%
0-40	2555.9	43.50%
0-60	4488.6	76.40%
60-90	1373.6	23.40%
70-100	654.9	11.10%
90-120	6.6	0.10%
0-90	5862.2	99.70%
90-180	16.7	0.30%
0-180	5878.9	100.00%

Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-5	48.8	0.80%	90-95	1.8	0.00%
5-10	144.8	2.50%	95-100	1.2	0.00%
10-15	235.1	4.00%	100-105	1.1	0.00%
15-20	316.1	5.40%	105-110	0.9	0.00%
20-25	384.4	6.50%	110-115	0.8	0.00%
25-30	440.0	7.50%	115-120	0.8	0.00%
30-35	481.1	8.20%	120-125	0.9	0.00%
35-40	505.6	8.60%	125-130	1.0	0.00%
40-45	511.9	8.70%	130-135	1.0	0.00%
45-50	502.5	8.50%	135-140	1.0	0.00%
50-55	478.6	8.10%	140-145	1.1	0.00%
55-60	439.8	7.50%	145-150	1.0	0.00%
60-65	389.1	6.60%	150-155	1.0	0.00%
65-70	332.7	5.70%	155-160	0.9	0.00%
70-75	272.2	4.60%	160-165	0.9	0.00%
75-80	204.4	3.50%	165-170	0.7	0.00%
80-85	129.4	2.20%	170-175	0.5	0.00%
85-90	45.7	0.80%	175-180	0.2	0.00%



Goniophotometer Test (Cont'd)

Intensity Data(cd)

Candela Table - Type C																			
	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360		
0	2037	2037	2037	2037	2037	2037	2037	2037	2037	2037	2037	2037	2037	2037	2037	2037	2037	2037	2037
1	2032	2030	2034	2048	2055	2045	2034	2034	2031	2029	2033	2048	2055	2047	2037	2036	2032	2032	2032
2	2032	2026	2030	2048	2059	2056	2046	2038	2030	2023	2028	2046	2059	2057	2048	2041	2033	2033	2033
3	2033	2022	2026	2043	2057	2062	2052	2041	2030	2019	2024	2043	2058	2063	2056	2045	2034	2034	2034
4	2033	2019	2020	2039	2055	2066	2057	2043	2028	2014	2016	2038	2055	2068	2062	2049	2034	2034	2034
5	2032	2015	2013	2031	2049	2067	2058	2042	2024	2010	2007	2029	2050	2069	2064	2050	2032	2032	2032
6	2030	2012	2004	2024	2043	2064	2057	2039	2021	2005	1999	2023	2044	2066	2064	2048	2029	2029	2029
7	2026	2010	1997	2017	2036	2058	2052	2035	2016	2002	1993	2015	2039	2061	2060	2045	2026	2026	2026
8	2022	2008	1992	2010	2030	2050	2046	2030	2011	1997	1986	2008	2034	2055	2055	2040	2022	2022	2022
9	2015	2004	1988	2004	2025	2039	2038	2022	2004	1993	1982	2001	2028	2046	2048	2033	2016	2016	2016
10	2006	1999	1986	1999	2018	2028	2028	2013	1995	1986	1977	1995	2021	2034	2037	2024	2009	2009	2009
11	1998	1993	1983	1992	2010	2016	2013	2000	1985	1978	1974	1988	2012	2020	2023	2012	1999	1999	1999
12	1987	1984	1980	1987	2000	2002	1998	1986	1973	1968	1970	1982	2002	2008	2008	2000	1988	1988	1988
13	1976	1974	1976	1981	1989	1987	1980	1971	1960	1958	1964	1976	1990	1995	1994	1987	1977	1977	1977
14	1964	1962	1969	1976	1977	1974	1962	1954	1946	1947	1956	1971	1980	1983	1979	1972	1964	1964	1964
15	1952	1951	1959	1970	1966	1959	1945	1938	1933	1935	1947	1964	1970	1970	1963	1958	1952	1952	1952
16	1938	1939	1946	1961	1956	1945	1928	1922	1918	1922	1936	1956	1960	1957	1947	1943	1939	1939	1939
17	1922	1926	1933	1950	1946	1932	1912	1905	1902	1908	1922	1944	1949	1943	1931	1925	1924	1924	1924
18	1906	1913	1918	1937	1934	1917	1896	1887	1885	1892	1905	1930	1937	1928	1915	1908	1907	1907	1907
19	1890	1897	1902	1920	1922	1904	1880	1868	1867	1875	1886	1911	1924	1913	1897	1889	1891	1891	1891
20	1872	1881	1886	1902	1908	1890	1864	1849	1848	1857	1866	1890	1908	1898	1882	1871	1874	1874	1874
25	1782	1785	1787	1800	1811	1805	1780	1756	1750	1761	1771	1793	1816	1820	1805	1786	1782	1782	1782
30	1672	1686	1697	1714	1722	1708	1683	1652	1638	1652	1673	1703	1723	1722	1706	1682	1672	1672	1672
35	1556	1566	1592	1616	1621	1600	1563	1528	1515	1533	1566	1603	1621	1616	1592	1566	1555	1555	1555
40	1424	1434	1456	1490	1505	1485	1440	1398	1383	1398	1431	1476	1507	1501	1468	1435	1425	1425	1425
45	1278	1298	1323	1360	1374	1351	1307	1261	1237	1253	1291	1340	1370	1361	1332	1296	1279	1279	1279
50	1130	1155	1193	1234	1242	1211	1156	1111	1088	1109	1156	1209	1236	1220	1181	1147	1131	1131	1131
55	978	1000	1046	1092	1106	1072	1008	955	933	960	1012	1072	1101	1084	1037	994	978	978	978
60	811	841	891	950	970	934	864	797	768	795	856	925	958	938	885	833	811	811	811
65	648	677	742	814	839	798	718	643	607	631	702	784	825	799	735	674	647	647	647
70	493	522	601	684	714	673	582	492	452	483	567	658	701	676	599	524	494	494	494
75	342	381	472	555	581	543	455	352	303	341	439	524	561	542	468	380	342	342	342
80	203	249	342	402	420	387	318	224	171	214	307	373	409	388	330	245	202	202	202
85	83	132	187	219	226	204	160	107	59	103	159	205	229	220	186	130	84	84	84
90	8	13	12	8	4	4	4	3	2	3	3	5	8	14	18	14	7	7	7
95	2	2	3	3	3	3	3	2	2	2	3	3	3	3	2	2	2	2	2
100	2	2	2	2	3	2	2	2	2	2	2	2	2	3	2	2	2	2	2
105	2	2	2	2	2	2	2	1	2	2	2	2	2	2	1	2	1	1	1
110	1	1	1	2	2	2	2	1	1	2	2	2	2	1	2	1	1	1	1
115	2	2	2	1	1	2	1	2	2	2	1	2	1	2	2	2	1	1	1
120	1	2	2	2	2	2	2	2	2	1	2	2	2	2	2	1	2	2	2
125	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
130	2	2	2	2	3	2	2	2	2	3	3	2	3	3	2	2	2	2	2
135	3	3	2	2	3	3	2	2	3	3	3	2	3	2	3	2	3	3	3
140	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
145	3	4	4	3	3	3	4	3	4	3	4	4	3	3	3	4	3	3	3
150	4	4	4	4	4	4	4	4	4	4	4	3	4	4	4	3	3	3	3
155	4	4	4	4	4	5	4	4	4	4	5	4	4	4	4	4	4	4	4
160	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4
165	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
170	6	7	6	6	7	7	7	6	7	7	7	6	7	7	6	6	7	7	7
175	6	6	6	7	6	7	7	7	6	7	6	7	7	7	7	7	7	7	7
180	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7



THD and PF Test

Model No.	ETLDI01B-24/NH/45/YDM/CCT/APP 830(A3+B3)		Sample ID.	5016347
Operate time (Min.)	90	Stabilization time (Min.)	45	

Test Method

1. The samples were tested according to the ANSI C82.77-10-2014.
2. The ambient temperature condition was maintained at $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. The sample measurement was made using a digital power meter and power supply. The sample was operated at rated voltage and stabilized before measurement. The total harmonic distortion were calculated from the digital power meter.

Test Results

Temperature ($^{\circ}\text{C}$)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
24.5	120.08	60	0.3876	46.41	0.9972	3.86%	Horizontal
24.5	277.16	60	0.1708	46.03	0.9719	5.51%	Horizontal



THD and PF Test

Model No.	ETLDI01B-24/NH/45/YDM/CCT/APP 835(A3+B3)		Sample ID.	5016347
Operate time (Min.)	90	Stabilization time (Min.)	45	

Test Method

1. The samples were tested according to the ANSI C82.77-10-2014.
2. The ambient temperature condition was maintained at 25 °C ± 1 °C. The sample measurement was made using a digital power meter and power supply. The sample was operated at rated voltage and stabilized before measurement. The total harmonic distortion were calculated from the digital power meter.

Test Results

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
24.5	119.96	60	0.3863	46.27	0.9972	3.66%	Horizontal
24.5	276.94	60	0.1704	45.84	0.9718	5.57%	Horizontal



THD and PF Test

Model No.	ETLDI01B-24/NH/45/YDM/CCT/APP 840(A3+B3)		Sample ID.	5016347
Operate time (Min.)	90	Stabilization time (Min.)	45	

Test Method

1. The samples were tested according to the ANSI C82.77-10-2014.
2. The ambient temperature condition was maintained at 25 °C ± 1 °C. The sample measurement was made using a digital power meter and power supply. The sample was operated at rated voltage and stabilized before measurement. The total harmonic distortion were calculated from the digital power meter.

Test Results

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
24.5	120.01	60	0.3872	46.30	0.9972	3.65%	Horizontal
24.5	276.93	60	0.1706	45.90	0.9719	5.51%	Horizontal



THD and PF Test

Model No.	ETLDI01B-24/NH/45/YDM/CCT/APP 850(A3+B3)		Sample ID.	5016347
Operate time (Min.)	90	Stabilization time (Min.)	45	

Test Method

1. The samples were tested according to the ANSI C82.77-10-2014.
2. The ambient temperature condition was maintained at $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. The sample measurement was made using a digital power meter and power supply. The sample was operated at rated voltage and stabilized before measurement. The total harmonic distortion were calculated from the digital power meter.

Test Results

Temperature ($^{\circ}\text{C}$)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
24.5	120.13	60	0.3901	46.75	0.9973	3.86%	Horizontal
24.5	277.01	60	0.1715	46.20	0.9712	5.75%	Horizontal



In-Situ Temperature Measurement Test

Model No.	ETLDI01B-24/NH/45/YDM/CCT/APP 830(A3+B3)	Sample ID.	5016347
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Test Method

1. In-Situ Temperature Measurement Test is conducted according to the UL 1598-2008, Section 14.
2. The testing was conducted in a room with ambient temperature of $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$. The apparatus construction followed those described in UL1598-2008 for normal temperature testing. Thermocouples were placed on the LED package in the locations indicated by LM-80 report. Thermocouples were placed on the LED driver case in the locations specified by the manufacture if necessary. The temperature was recorded after the lamp was operated by 7.5 hours.
3. The data and photos in LM-80 test report is provided by the customer/ The data and photos in driver specification is provided by the customer.

In-Situ Temperature Measurement Test Conditions

Temperature ($^{\circ}\text{C}$)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
23.5	120.08	60	0.3876	46.41	0.9972	3.86%	Horizontal

Test Results (LEDs)

Thermocouple Location	Declared Light Source Current (mA)	Temperature for Light Source ($^{\circ}\text{C}$)		Max Chromaticity Shift (1000-6000h)	LED Model Number	LM-80 Limit Current (mA)	LM-80 Limit Temp ($^{\circ}\text{C}$)
		Test Result	Test Result (Correct to 25°C)				
Ambient TEMP	N/A	23.5	25.0				
TMP of Location 1	90	46.0	47.5	0.0024	STW8A2PD-XX	200	105

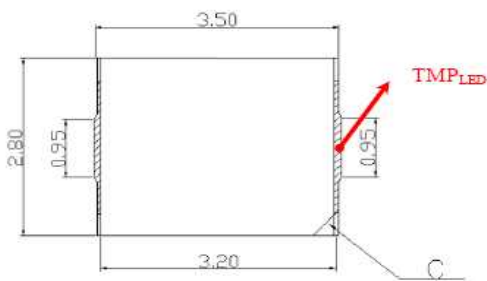
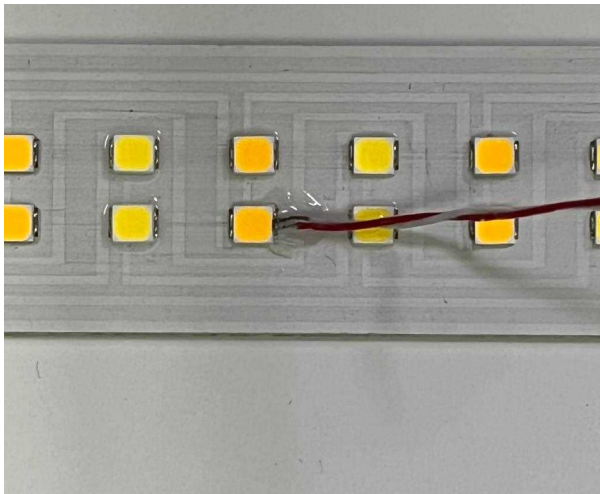
Test Results (Drivers)

Thermocouple Location	Temperature for Driver ($^{\circ}\text{C}$)		Driver Model Number	Driver Limit Temp ($^{\circ}\text{C}$)
	Test Result	Test Result (Correct to 25°C)		
Ambient TEMP	23.5	25.0		
TMP of Location 1	61.1	62.6	SIF 50-I1250 120-277 T D1 APP	90



In-Situ Temperature Measurement Test (Cont'd)

Test Photos for Ts Point of Light Sources & Tc Point of Drivers





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