



DesignLights Consortium Test Report

Reference Standards

UL1598-2008

ANSI C82.77-10-2014

IES LM-79-2008

Prepared For

Jiangsu Ever-tie Lighting Inc

No. 18, East Fuxing Road, NETDA, Jiangsu Province China

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Test Laboratory:

UL-CCIC Company Limited

Test Laboratory Address:

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Catalog Number

ETLDI01B-22/NG/35/YDM/CCT/APP 830(A3+B3)

Project Number

4790409923

Report Number

4790409923_29

Test Date

2022-06-25~2022-06-27

Issue Date

2022-06-28

Revision Date

N/A

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Approved By

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Wu, Elvis

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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	≥2000	-10%	4186.4
Minimum Luminaire Efficacy (lm/W)-Luminaires	IES LM-79-2008	≥110	-3%	123.15
Spacing Criteria (0-180°)	IES LM-79-2008	1.0-2.0	±0.1	1.16
Spacing Criteria (90-270°)	IES LM-79-2008	1.0-2.0	±0.1	1.18
Zonal Lumen Requirement 1(0°-60°)	IES LM-79-2008	≥75%	-3%	82.70%
Allowable CCT (3000K)	IES LM-79-2008/ANSI C78.377-2015	3045±175	N/A	3040
Allowable CCT (3500K)	IES LM-79-2008/ANSI C78.377-2015	3465±245	N/A	3479
Allowable CCT (4000K)	IES LM-79-2008/ANSI C78.377-2015	3985±275	N/A	3832
Allowable CCT (5000K)	IES LM-79-2008/ANSI C78.377-2015	5029±283	N/A	4920
Minimum CRI	IES LM-79-2008/CIE 13.3-1995	≥80	-1	82
Minimum R9	IES LM-79-2008	≥0	-1	2.0
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%	-13%
Unified Glare Rating (UGR)	IES LM-79-2008	≤22	N/A	21.6
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	0.9672
Total Harmonic Distortion (A%)	ANSI C82.77-10-2014	≤20%	5%	7.05%
In-Situ Temperature Measurement Test for LED 1 (°C)	UL1598-2008	≤105	N/A	47.4
In-Situ Temperature Measurement Test for Driver 1 (°C)	UL1598-2008	≤90	N/A	57.1
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	2022-06-26	ETLDI01B-22/NG/35/YDM/CCT/APP 830(A3+B3)	Yang, Gavin X
Integrating Sphere Test	2022-06-26	ETLDI01B-22/NG/35/YDM/CCT/APP 835(A3+B3)	Yang, Gavin X
Integrating Sphere Test	2022-06-26	ETLDI01B-22/NG/35/YDM/CCT/APP 840(A3+B3)	Yang, Gavin X
Integrating Sphere Test	2022-06-26	ETLDI01B-22/NG/35/YDM/CCT/APP 850(A3+B3)	Yang, Gavin X
Goniophotometer Test	2022-06-25	ETLDI01B-22/NG/35/YDM/CCT/APP 830(A3+B3)	Yang, Gavin X
Goniophotometer Test	2022-06-25	ETLDI01B-22/NG/35/YDM/CCT/APP 850(A3+B3)	Yang, Gavin X
THD and PF Test	2022-06-25	ETLDI01B-22/NG/35/YDM/CCT/APP 830(A3+B3)	Yang, Gavin X
THD and PF Test	2022-06-25	ETLDI01B-22/NG/35/YDM/CCT/APP 835(A3+B3)	Yang, Gavin X
THD and PF Test	2022-06-25	ETLDI01B-22/NG/35/YDM/CCT/APP 840(A3+B3)	Yang, Gavin X
THD and PF Test	2022-06-25	ETLDI01B-22/NG/35/YDM/CCT/APP 850(A3+B3)	Yang, Gavin X
In-Situ Temperature Measurement Test	2022-06-27	ETLDI01B-22/NG/35/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: 2x2 Luminaires for Ambient Lighting of Interior Commercial Spaces

Model Number: ETLDI01B-22/NG/35/YDM/CCT/APP 830(A3+B3)

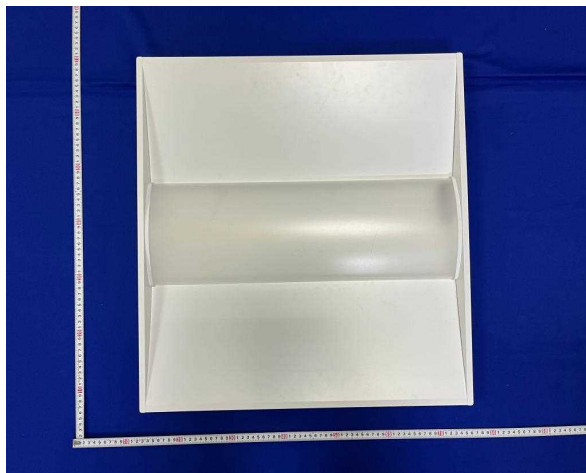
Electrical Parameter: 120-277V, 50/60Hz

LED Package: STW8A2PD-XX

Dimming Information: Continuous dimming capability

Products Scaled Value

Model Number	CCT	Luminous Flux	Power	Luminous Efficacy
ETLDI01B-22/NG/35/YDM/CCT/ APP 830(A3+B3)	3000K	4375	35	125
ETLDI01B-22/NG/35/YDM/CCT/ APP 835(A3+B3)	3500K	4410	35	126
ETLDI01B-22/NG/35/YDM/CCT/ APP 840(A3+B3)	4000K	4445	35	127
ETLDI01B-22/NG/35/YDM/ CCT/APP 850(A3+B3)	5000K	4480	35	128





Integrating Sphere Test

Model No.	ETLDI01B-22/NG/35/YDM/CCT/APP 830(A3+B3)	Sample ID.	5016344
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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. The reference standard lamp is rated current 2.679A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.

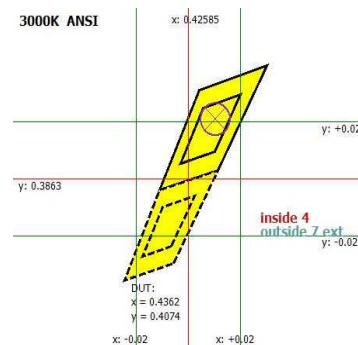
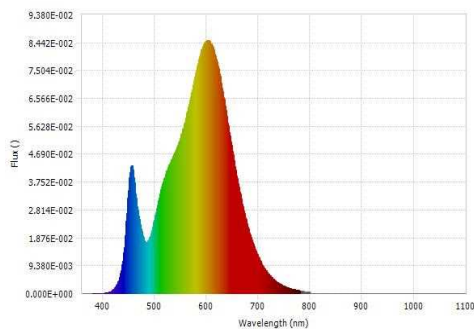
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions was using 4π geometry. The self-absorption 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
25.0	119.98	60	0.2841	33.948	0.9960	Horizontal

Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
3040	82	2.0	0.0015	4205.22	123.87	N/A



Luminous Flux (lm)	4205.22	Chrom x	0.4362
Chrom y	0.4074	Chrom u	0.2486
Chrom v	0.3484	Duv	0.0015
Chrom u'	0.2486	Chrom v'	0.5226
CCT (K)	3040	Luminous Efficacy (lm/W)	123.87
Ra	82	R1	80.0
R2	91.0	R3	96.0
R4	79.0	R5	80.0
R6	88.0	R7	82.0
R8	57.0	R9	2.0
R10	78.0	R11	77.0
R12	66.0	R13	82.0
R14	99.0	R15	72.0
Rf	84	Rg	94
Rcs,h1	-12%		



Integrating Sphere Test (Cont'd)

TM-30 Report

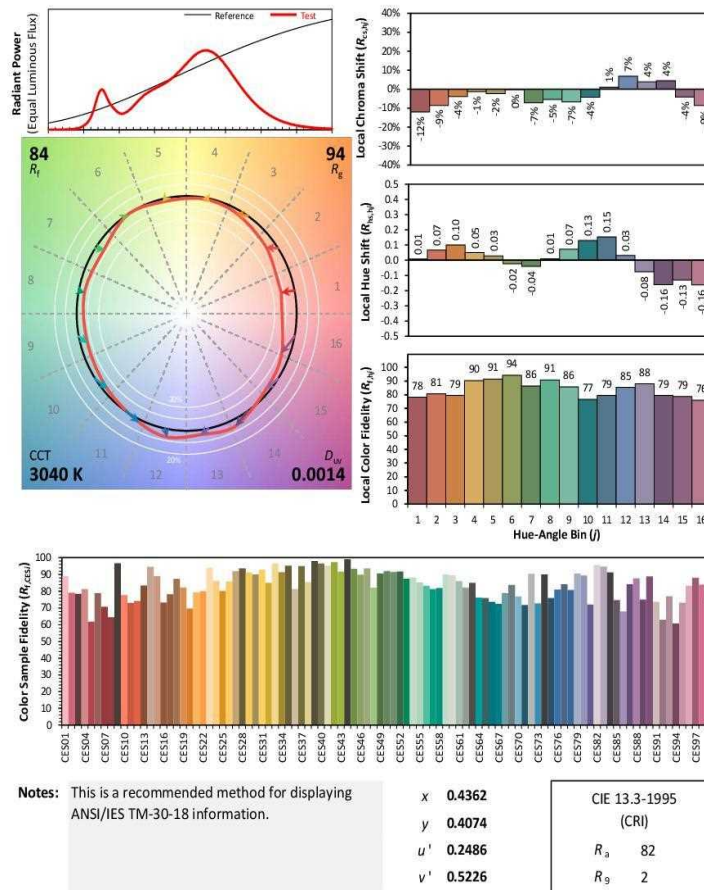
ANSI/IES TM-30-18 Color Rendition Report

Source: SL-xB2835YTA-31KAXH-AE

Date: 6/24/2022

Manufacturer: Jiangsu Ever-tie Lighting Inc

Model: ETLDI018-22/NG/35/YDM/CCT/APP
830(A3+B3)



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Integrating Sphere Test

Model No.	ETLDI01B-22/NG/35/YDM/CCT/APP 835(A3+B3)	Sample ID.	5016344
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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. The reference standard lamp is rated current 2.679A omni-directional Incandescent lamp and was calibrated by National Institute of Metrology P.R.China.

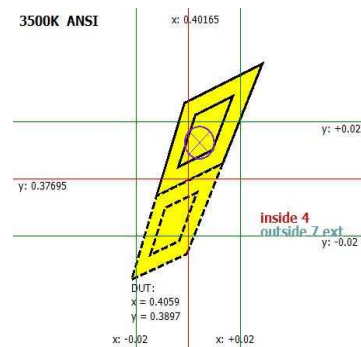
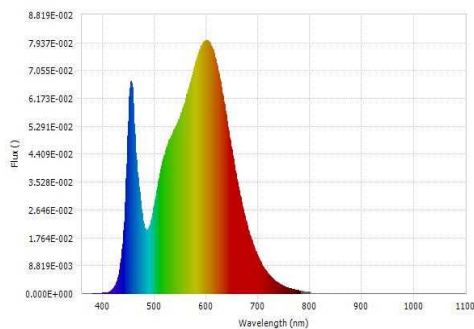
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions was using 4π geometry. The self-absorption 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
25.0	120	60	0.2808	33.556	0.9958	Horizontal

Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
3479	83	10.0	-0.0006	4278.72	127.51	N/A



Luminous Flux (lm)	4278.72	Chrom x	0.4059
Chrom y	0.3897	Chrom u	0.2365
Chrom v	0.3406	Duv	-0.0006
Chrom u'	0.2365	Chrom v'	0.5109
CCT (K)	3479	Luminous Efficacy (lm/W)	127.51
Ra	83	R1	82.0
R2	91.0	R3	96.0
R4	81.0	R5	81.0
R6	88.0	R7	84.0
R8	62.0	R9	10.0
R10	78.0	R11	79.0
R12	64.0	R13	84.0
R14	98.0	R15	75.0
Rf	84	Rg	95
Rcs,h1	-12%		



Integrating Sphere Test (Cont'd)

TM-30 Report

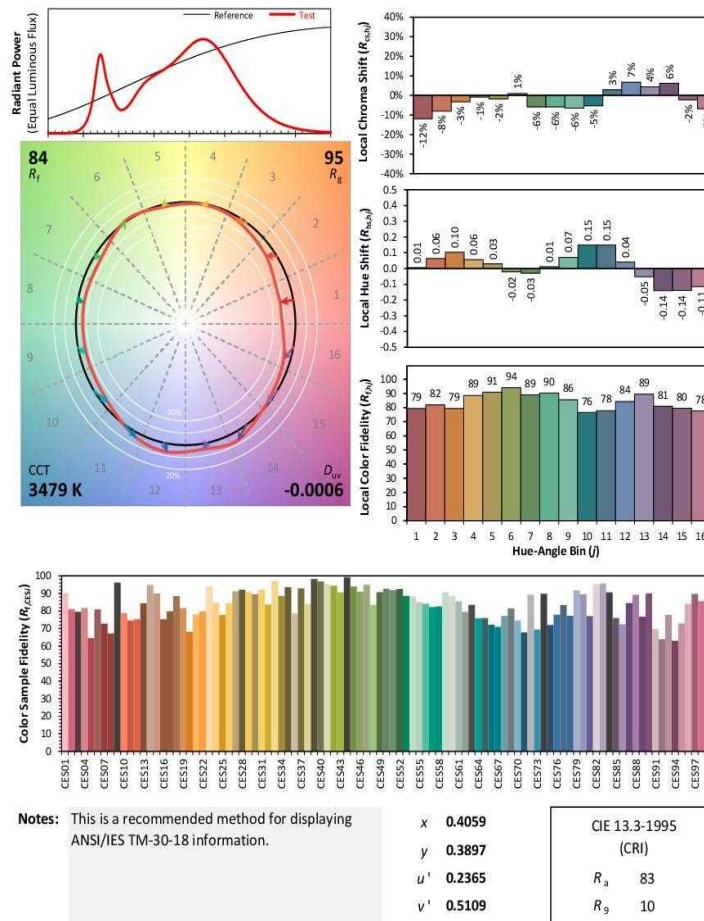
ANSI/IES TM-30-18 Color Rendition Report

Source: STW8A2PD-XX

Manufacturer: Jiangsu Ever-tie Lighting Inc

Date: 6/26/2022

Model: ETLDI01B-22/NG/35/YDM/CCT/APP
835(A3+B3)



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Integrating Sphere Test

Model No.	ETLDI01B-22/NG/35/YDM/CCT/APP 840(A3+B3)	Sample ID.	5016344
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.

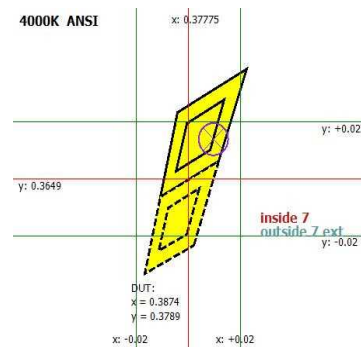
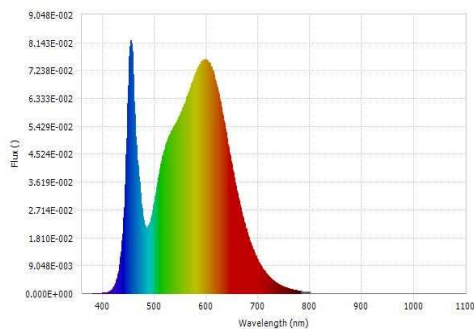
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions was using 4π geometry. The self-absorption 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
25.0	119.99	60	0.2814	33.624	0.9959	Horizontal

Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
3832	84	12.0	-0.0010	4318.04	128.42	N/A



Luminous Flux (lm)	4318.04	Chrom x	0.3874
Chrom y	0.3789	Chrom u	0.2288
Chrom v	0.3357	Duv	-0.0010
Chrom u'	0.2288	Chrom v'	0.5035
CCT (K)	3832	Luminous Efficacy (lm/W)	128.42
Ra	84	R1	82.0
R2	91.0	R3	95.0
R4	81.0	R5	82.0
R6	86.0	R7	85.0
R8	65.0	R9	12.0
R10	77.0	R11	80.0
R12	61.0	R13	85.0
R14	98.0	R15	77.0
Rf	84	Rg	95
Rcs,h1	-12%		



Integrating Sphere Test (Cont'd)

TM-30 Report

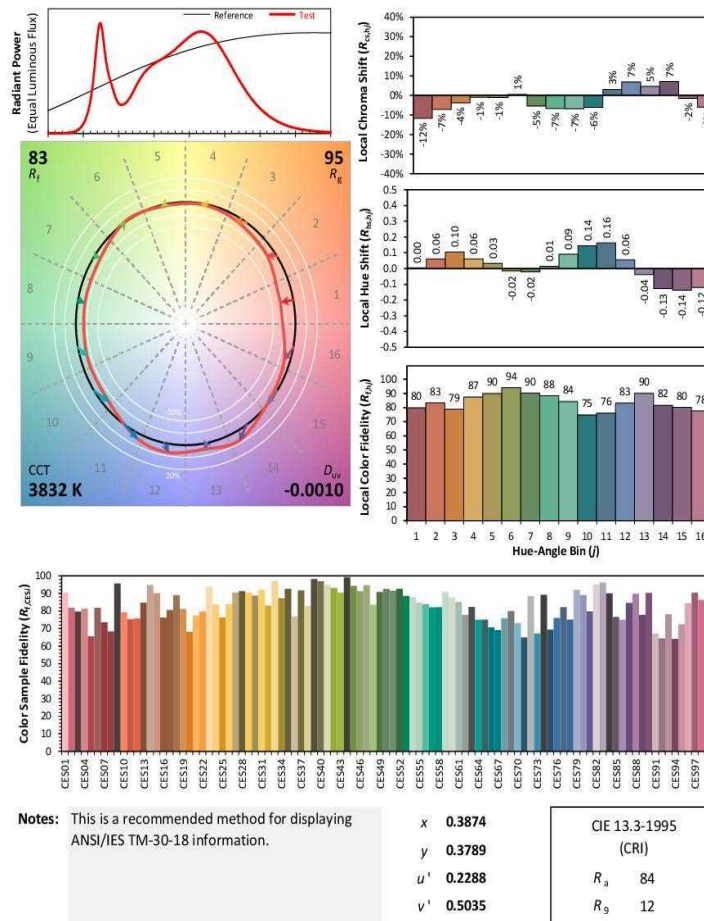
ANSI/IES TM-30-18 Color Rendition Report

Source: STW8A2PD-XX

Manufacturer: Jiangsu Ever-tie Lighting Inc

Date: 6/26/2022

Model: ETLDI01B-22/NG/35/YDM/CCT/APP
840(A3+B3)



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Integrating Sphere Test

Model No.	ETLDI01B-22/NG/35/YDM/CCT/APP 850(A3+B3)	Sample ID.	5016344
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.

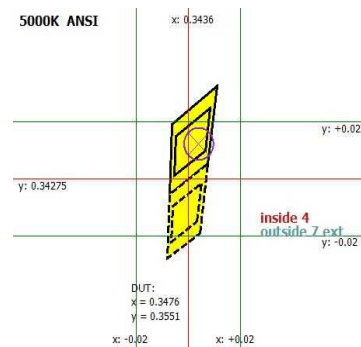
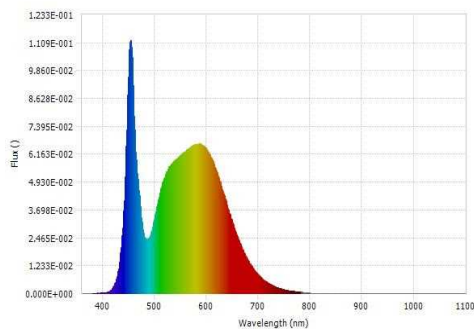
3. The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere. Coating reflectance of the integrating sphere was 90% to 98%. Photometric measurement conditions was using 4π geometry. The self-absorption 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
25.0	119.99	60	0.2857	34.147	0.9961	Horizontal

Test Results

CCT (K)	CRI (Ra)	R9	Duv	Flux (lm)	Luminous Efficacy (lm/W)	Efficacy(lm/ft)
4920	82	10.0	0.0008	4262.05	124.81	N/A



Luminous Flux (lm)	4262.05	Chrom x	0.3476
Chrom y	0.3551	Chrom u	0.2117
Chrom v	0.3245	Duv	0.0008
Chrom u'	0.2117	Chrom v'	0.4867
CCT (K)	4920	Luminous Efficacy (lm/W)	124.81
Ra	82	R1	81.0
R2	89.0	R3	92.0
R4	81.0	R5	80.0
R6	82.0	R7	88.0
R8	68.0	R9	10.0
R10	71.0	R11	78.0
R12	52.0	R13	83.0
R14	96.0	R15	76.0
Rf	82	Rg	95
Rcs,h1	-13%		



Integrating Sphere Test (Cont'd)

TM-30 Report

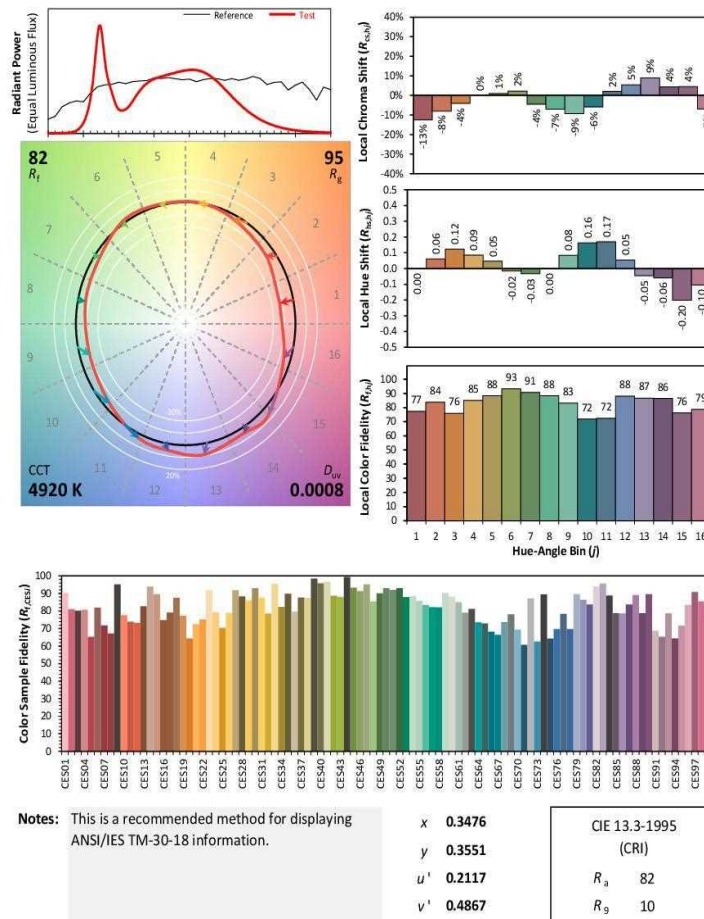
ANSI/IES TM-30-18 Color Rendition Report

Source: STW8A2PD-XX

Date: 6/26/2022

Manufacturer: Jiangsu Ever-tie Lighting Inc

Model: ETLDI01B-22NG35YDMCCTAPP
850(A3+B3)



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Goniophotometer Test

Model No.	ETLDI01B-22/NG/35/YDM/CCT/APP 830(A3+B3)	Sample ID.	5016344
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
24.6	120.08	60	0.2839	33.994	0.9972	4.77%	Horizontal

Test Results

Luminous Flux (lm)	Zonal Lumen Requirement 1	Zonal Lumen Requirement 2	Beam Angle (50%)		Luminous Efficacy (lm/W)
	0° - 60°	N/A	Horizontal Spread	Vertical Spread	
4186.4	83.00%	N/A	96.9	82.4	123.15

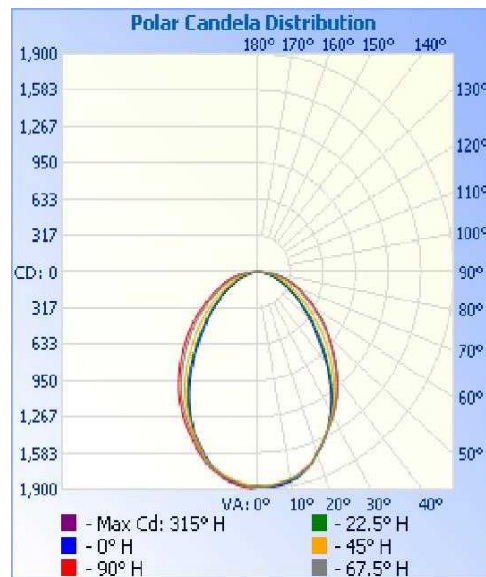
Backlight	Uplight	Glare
N/A	N/A	N/A

UGR		Spacing Criteria (0 - 180°)	Spacing Criteria (90° - 270°)
Crosswise	Endwise		
18.0	21.5	1.14	1.18

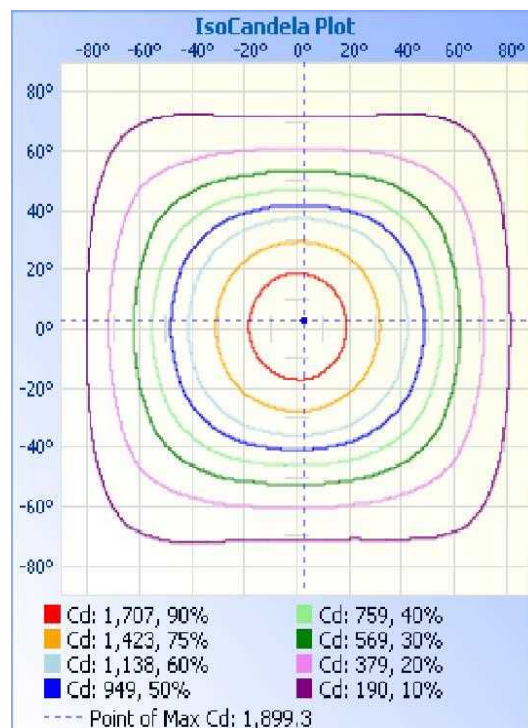


Goniophotometer Test (Cont'd)

Polar Candela Distribution



IsoCandela Plot





Goniophotometer Test (Cont'd)

Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1386.3	33.10%
0-40	2176.8	52.00%
0-60	3470.1	82.90%
60-90	703.5	16.80%
70-100	311.6	7.40%
90-120	3.9	0.10%
0-90	4173.5	99.70%
90-180	12.9	0.30%
0-180	4186.4	100.00%

Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-5	44.9	1.10%	90-95	0.9	0.00%
5-10	132.8	3.20%	95-100	0.7	0.00%
10-15	214.0	5.10%	100-105	0.6	0.00%
15-20	283.4	6.80%	105-110	0.5	0.00%
20-25	336.4	8.00%	110-115	0.5	0.00%
25-30	374.7	9.00%	115-120	0.6	0.00%
30-35	395.3	9.40%	120-125	0.7	0.00%
35-40	395.2	9.40%	125-130	0.7	0.00%
40-45	375.7	9.00%	130-135	0.8	0.00%
45-50	345.4	8.30%	135-140	0.9	0.00%
50-55	307.9	7.40%	140-145	0.9	0.00%
55-60	264.2	6.30%	145-150	0.9	0.00%
60-65	218.1	5.20%	150-155	0.9	0.00%
65-70	175.4	4.20%	155-160	0.9	0.00%
70-75	137.3	3.30%	160-165	0.8	0.00%
75-80	99.5	2.40%	165-170	0.7	0.00%
80-85	57.0	1.40%	170-175	0.5	0.00%
85-90	16.3	0.40%	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	1874	1874	1874	1874	1874	1874	1874	1874	1874	1874	1874	1874	1874	1874	1874	1874	1874	1874	1874
1	1877	1873	1871	1881	1881	1880	1878	1872	1872	1876	1875	1887	1886	1886	1881	1873	1870	1875	1875
2	1880	1877	1873	1883	1883	1884	1883	1876	1875	1875	1874	1887	1889	1893	1890	1881	1875	1875	1875
3	1883	1878	1871	1881	1883	1886	1885	1879	1874	1871	1868	1884	1889	1895	1896	1886	1878	1878	1878
4	1884	1876	1868	1876	1880	1886	1887	1879	1872	1866	1860	1876	1886	1896	1898	1889	1880	1880	1880
5	1883	1873	1861	1868	1875	1884	1885	1875	1866	1858	1850	1866	1879	1894	1899	1890	1879	1879	1879
6	1880	1868	1855	1862	1870	1879	1880	1870	1860	1850	1840	1857	1872	1890	1896	1888	1876	1876	1876
7	1875	1863	1849	1856	1864	1873	1874	1862	1853	1842	1832	1848	1865	1884	1891	1883	1872	1872	1872
8	1871	1858	1843	1849	1859	1865	1866	1854	1844	1835	1823	1839	1857	1877	1884	1878	1867	1867	1867
9	1864	1851	1837	1842	1850	1855	1854	1842	1834	1826	1815	1830	1847	1867	1876	1870	1861	1861	1861
10	1855	1845	1831	1835	1840	1842	1840	1829	1822	1817	1806	1820	1836	1853	1864	1860	1853	1853	1853
11	1845	1838	1825	1828	1829	1828	1824	1813	1809	1806	1798	1810	1823	1838	1849	1847	1844	1844	1844
12	1834	1831	1819	1819	1817	1812	1807	1796	1795	1795	1789	1800	1810	1823	1833	1833	1832	1832	1832
13	1823	1821	1811	1810	1805	1797	1790	1780	1779	1782	1779	1790	1798	1808	1818	1817	1819	1819	1819
14	1809	1810	1801	1800	1793	1782	1773	1762	1763	1768	1767	1779	1786	1794	1801	1802	1805	1805	1805
15	1794	1795	1788	1788	1780	1766	1755	1744	1744	1751	1753	1766	1773	1779	1785	1786	1790	1790	1790
16	1776	1778	1772	1772	1765	1748	1735	1722	1723	1731	1735	1751	1758	1763	1768	1769	1773	1773	1773
17	1756	1759	1753	1754	1748	1729	1714	1700	1700	1708	1714	1732	1741	1746	1750	1751	1755	1755	1755
18	1735	1739	1732	1732	1727	1708	1692	1676	1676	1684	1689	1709	1722	1727	1730	1730	1734	1734	1734
19	1712	1716	1709	1709	1704	1687	1669	1652	1650	1658	1663	1684	1700	1706	1710	1708	1711	1711	1711
20	1689	1692	1686	1685	1680	1664	1646	1628	1625	1632	1637	1658	1676	1684	1688	1686	1688	1688	1688
25	1565	1564	1563	1569	1568	1550	1528	1501	1491	1499	1512	1538	1563	1573	1577	1568	1562	1562	1562
30	1416	1426	1440	1455	1457	1434	1398	1354	1334	1351	1381	1421	1451	1460	1454	1431	1415	1415	1415
35	1237	1258	1299	1331	1334	1303	1250	1184	1153	1184	1239	1296	1331	1331	1308	1262	1234	1234	1234
40	1029	1060	1132	1185	1195	1160	1087	994	954	989	1070	1149	1194	1193	1151	1073	1030	1030	1030
45	836	870	962	1035	1051	1013	923	815	775	806	899	998	1047	1043	982	883	837	837	837
50	671	704	802	894	912	871	768	660	625	652	746	853	904	893	816	714	672	672	672
55	532	556	650	752	778	735	626	525	494	517	604	714	763	750	662	566	531	531	531
60	409	431	514	615	643	599	493	405	380	398	472	576	623	607	521	437	409	409	409
65	306	324	396	492	520	478	380	303	283	297	361	453	498	480	400	328	307	307	307
70	221	238	302	393	421	382	289	221	203	216	273	357	400	380	305	241	222	222	222
75	148	166	227	302	329	291	214	150	129	147	202	276	313	296	227	168	146	146	146
80	82	104	157	204	213	193	143	91	68	87	137	190	215	206	159	105	82	82	82
85	33	50	71	88	91	83	62	39	24	37	59	81	92	91	75	52	34	34	34
90	4	3	3	2	2	2	2	1	1	1	2	2	3	2	4	4	4	4	4
95	1	2	2	2	2	2	2	1	1	1	2	2	2	2	1	1	1	1	1
100	1	1	1	2	1	1	1	1	1	1	1	1	2	2	1	1	1	1	1
105	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
110	1	1	1	2	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1
115	0	1	1	2	2	1	1	1	1	1	1	2	2	1	1	1	1	1	1
120	1	1	1	2	1	2	2	1	2	2	1	2	2	1	1	1	1	1	1
125	1	2	1	2	2	2	2	1	2	2	2	2	1	2	1	1	1	1	1
130	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
135	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
140	2	3	3	3	2	3	2	2	2	3	2	3	3	3	2	2	3	3	3
145	3	3	3	3	3	3	3	3	3	4	3	3	3	3	3	3	3	3	3
150	4	3	3	3	3	4	4	3	4	3	3	3	4	3	4	4	3	3	3
155	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
160	4	5	5	4	4	4	5	4	5	5	5	5	5	5	5	5	5	5	5
165	6	6	5	5	6	6	5	5	5	5	6	6	6	5	6	6	5	5	5
170	6	7	6	7	6	6	7	7	6	7	6	7	7	6	7	7	6	6	6
175	6	7	6	6	7	6	7	6	6	7	7	7	6	6	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



Goniophotometer Test

Model No.	ETLDI01B-22/NG/35/YDM/CCT/APP 850(A3+B3)	Sample ID.	5016344
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
24.6	120.07	60	0.2855	34.18	0.9971	4.81%	Horizontal

Test Results

Luminous Flux (lm)	Zonal Lumen Requirement 1	Zonal Lumen Requirement 2	Beam Angle (50%)		Luminous Efficacy (lm/W)
	0° - 60°	N/A	Horizontal Spread	Vertical Spread	
4248.6	82.70%	N/A	98.0	83.0	124.30

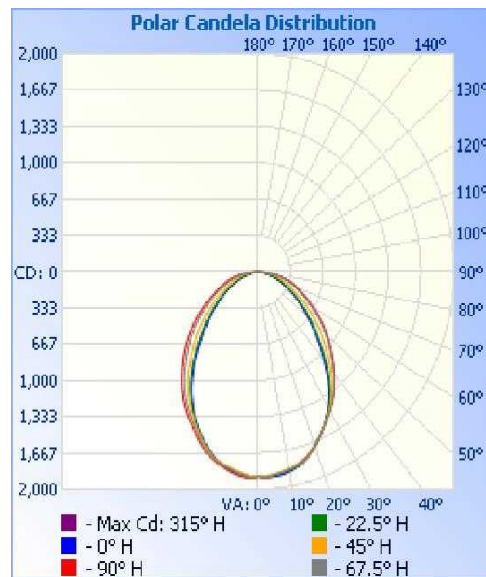
Backlight	Uplight	Glare
N/A	N/A	N/A

UGR		Spacing Criteria (0 - 180°)	Spacing Criteria (90° - 270°)
Crosswise	Endwise		
18.1	21.6	1.16	1.18

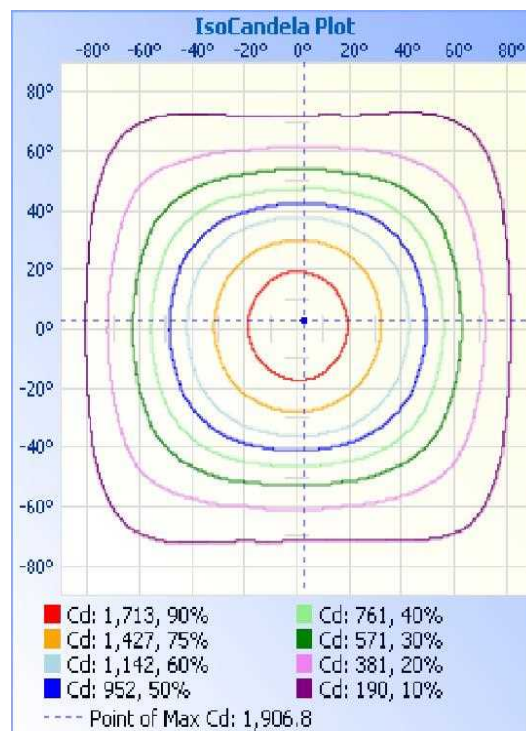


Goniophotometer Test (Cont'd)

Polar Candela Distribution



IsoCandela Plot





Goniophotometer Test (Cont'd)

Zonal Lumen Summary

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1397.1	32.90%
0-40	2198.7	51.70%
0-60	3515.4	82.70%
60-90	720.2	17.00%
70-100	319.6	7.50%
90-120	3.8	0.10%
0-90	4235.7	99.70%
90-180	12.9	0.30%
0-180	4248.6	100.00%

Lumens Per Zone

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-5	45.1	1.10%	90-95	0.9	0.00%
5-10	133.4	3.10%	95-100	0.7	0.00%
10-15	215.2	5.10%	100-105	0.6	0.00%
15-20	285.4	6.70%	105-110	0.5	0.00%
20-25	339.5	8.00%	110-115	0.5	0.00%
25-30	378.6	8.90%	115-120	0.6	0.00%
30-35	400.6	9.40%	120-125	0.6	0.00%
35-40	400.9	9.40%	125-130	0.7	0.00%
40-45	381.8	9.00%	130-135	0.8	0.00%
45-50	352.0	8.30%	135-140	0.9	0.00%
50-55	313.9	7.40%	140-145	1.0	0.00%
55-60	269.1	6.30%	145-150	1.0	0.00%
60-65	222.9	5.20%	150-155	1.0	0.00%
65-70	179.3	4.20%	155-160	0.9	0.00%
70-75	140.2	3.30%	160-165	0.8	0.00%
75-80	101.9	2.40%	165-170	0.7	0.00%
80-85	58.7	1.40%	170-175	0.5	0.00%
85-90	17.2	0.40%	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	1878	1878	1878	1878	1878	1878	1878	1878	1878	1878	1878	1878	1878	1878	1878	1878	1878	1878	1878
1	1880	1877	1874	1886	1886	1885	1882	1877	1878	1882	1881	1893	1893	1892	1888	1878	1876	1876	1876
2	1884	1881	1877	1888	1888	1889	1887	1882	1880	1881	1879	1894	1896	1899	1895	1886	1882	1882	1882
3	1886	1881	1876	1886	1888	1890	1890	1883	1880	1879	1874	1890	1896	1902	1901	1892	1886	1886	1886
4	1887	1880	1872	1882	1886	1891	1893	1883	1877	1872	1866	1883	1892	1903	1905	1898	1888	1888	1888
5	1886	1877	1866	1875	1881	1889	1890	1881	1872	1864	1856	1874	1887	1902	1907	1899	1888	1888	1888
6	1884	1874	1860	1869	1876	1885	1886	1875	1866	1856	1848	1864	1881	1899	1905	1897	1886	1886	1886
7	1882	1870	1855	1862	1872	1880	1880	1868	1858	1849	1839	1856	1874	1894	1902	1894	1883	1883	1883
8	1877	1865	1849	1856	1866	1872	1871	1860	1850	1841	1830	1847	1866	1886	1895	1888	1878	1878	1878
9	1871	1860	1844	1850	1858	1862	1860	1849	1840	1832	1821	1837	1856	1875	1885	1880	1871	1871	1871
10	1863	1854	1838	1844	1848	1849	1846	1835	1828	1822	1813	1828	1844	1863	1873	1871	1864	1864	1864
11	1854	1848	1833	1837	1837	1835	1831	1821	1816	1813	1805	1818	1832	1850	1860	1860	1855	1855	1855
12	1844	1841	1828	1829	1826	1821	1815	1806	1802	1802	1797	1808	1820	1835	1847	1847	1846	1846	1846
13	1833	1832	1821	1821	1815	1806	1799	1789	1788	1791	1788	1799	1809	1821	1833	1834	1835	1835	1835
14	1821	1822	1813	1811	1803	1792	1782	1771	1771	1777	1776	1788	1797	1806	1816	1818	1822	1822	1822
15	1805	1809	1800	1799	1790	1775	1763	1752	1752	1760	1762	1775	1784	1790	1799	1801	1806	1806	1806
16	1788	1793	1786	1785	1775	1758	1743	1731	1731	1739	1744	1760	1769	1774	1781	1783	1789	1789	1789
17	1769	1774	1767	1767	1758	1739	1723	1708	1708	1716	1722	1741	1753	1756	1763	1764	1770	1770	1770
18	1749	1752	1746	1746	1738	1719	1701	1686	1684	1693	1698	1720	1734	1739	1744	1745	1750	1750	1750
19	1728	1730	1723	1723	1716	1698	1679	1662	1660	1668	1674	1696	1714	1720	1725	1725	1730	1730	1730
20	1706	1708	1700	1700	1694	1675	1657	1639	1636	1643	1649	1672	1691	1700	1706	1705	1708	1708	1708
25	1583	1584	1582	1582	1585	1582	1563	1539	1512	1501	1509	1522	1550	1576	1588	1595	1588	1588	1588
30	1437	1445	1460	1475	1474	1448	1412	1367	1347	1363	1394	1435	1468	1479	1475	1453	1440	1440	1440
35	1260	1283	1323	1352	1352	1318	1264	1196	1165	1196	1252	1311	1348	1352	1331	1287	1260	1260	1260
40	1049	1080	1153	1205	1213	1174	1100	1004	966	999	1082	1163	1212	1213	1171	1093	1051	1051	1051
45	854	885	979	1055	1068	1027	936	826	786	819	912	1013	1066	1065	1005	905	859	859	859
50	686	717	819	912	929	884	779	670	634	663	759	870	923	915	837	733	692	692	692
55	544	571	668	772	793	747	635	532	501	524	610	723	777	763	675	577	541	541	541
60	418	439	525	631	655	609	501	412	386	404	479	586	637	621	535	448	419	419	419
65	312	331	404	504	532	487	386	309	289	304	368	464	511	494	412	339	315	315	315
70	226	243	311	403	432	390	294	226	206	219	277	363	407	388	311	246	225	225	225
75	150	169	232	310	337	298	218	153	132	148	206	280	320	302	233	173	150	150	150
80	84	106	161	207	221	197	146	93	71	90	141	196	221	213	165	109	85	85	85
85	34	51	75	92	95	86	64	41	25	38	61	83	94	94	77	53	35	35	35
90	4	4	4	3	2	2	2	1	1	1	2	3	2	4	4	5	4	4	4
95	1	2	1	1	1	2	1	1	1	1	1	2	2	1	2	1	1	1	1
100	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
105	1	0	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1
110	1	1	1	1	1	2	1	0	1	1	1	1	1	1	1	0	1	1	1
115	0	1	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1
120	1	2	1	1	1	1	2	1	1	1	2	1	2	1	1	2	1	1	1
125	2	2	1	2	2	2	2	1	2	1	2	2	2	1	1	1	2	2	2
130	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
135	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
140	3	3	3	2	2	3	2	2	3	2	3	3	3	3	2	3	3	3	3
145	3	3	3	3	3	3	3	3	3	3	3	4	3	3	3	3	3	3	3
150	4	4	4	4	4	4	4	4	4	3	4	4	4	4	4	3	4	4	4
155	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
160	4	4	4	4	5	5	4	5	4	5	4	4	5	5	4	5	5	5	5
165	5	6	6	6	6	6	6	5	5	5	6	6	6	6	6	6	6	6	6
170	7	6	6	6	6	6	7	6	7	6	6	7	6	7	7	7	7	7	7
175	6	7	6	7	6	7	6	7	7	6	6	7	6	7	7	6	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-22/NG/35/YDM/CCT/APP 830(A3+B3)		Sample ID.	5016344
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
24.6	120.08	60	0.2839	33.99	0.9972	4.77%	Horizontal
24.6	277.14	60	0.1267	33.95	0.9674	6.96%	Horizontal



THD and PF Test

Model No.	ETLDI01B-22/NG/35/YDM/CCT/APP 835(A3+B3)	Sample ID.	5016344
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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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
24.6	120.04	60	0.2805	33.60	0.9970	4.86%	Horizontal
24.6	277.11	60	0.1251	33.54	0.9672	7.05%	Horizontal



THD and PF Test

Model No.	ETLDI01B-22/NG/35/YDM/CCT/APP 840(A3+B3)		Sample ID.	5016344
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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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
24.6	120.08	60	0.2811	33.65	0.9970	4.84%	Horizontal
24.6	277.06	60	0.1253	33.60	0.9672	7.04%	Horizontal



THD and PF Test

Model No.	ETLDI01B-22/NG/35/YDM/CCT/APP 850(A3+B3)		Sample ID.	5016344
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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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
24.6	120.07	60	0.2854	34.18	0.9971	4.81%	Horizontal
24.6	277.06	60	0.1273	34.11	0.9676	6.68%	Horizontal



In-Situ Temperature Measurement Test

Model No.	ETLDI01B-22/NG/35/YDM/CCT/APP 830(A3+B3)	Sample ID.	5016344
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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 °C ± 5 °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 (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Current THD	Orientation
23.6	120.08	60	0.2839	33.994	0.9972	4.77%	Horizontal

Test Results (LEDs)

Thermocouple Location	Declared Light Source Current (mA)	Temperature for Light Source (°C)		Max Chromaticity Shift (1000-6000h)	LED Model Number	LM-80 Limit Current (mA)	LM-80 Limit Temp (°C)
		Test Result	Test Result (Correct to 25 °C)				
Ambient TEMP	N/A	23.6	25.0				
TMP of Location 1	110	46.0	47.4	0.0024	STW8A2PD-XX	200	105

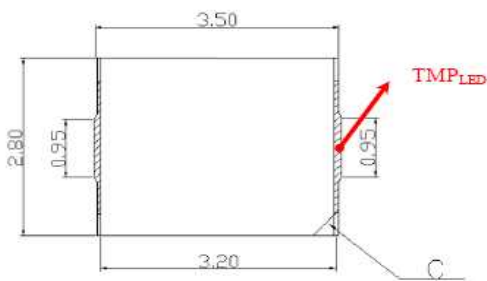
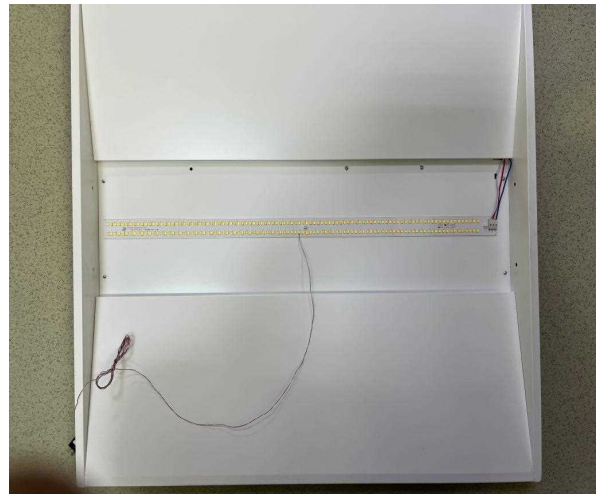
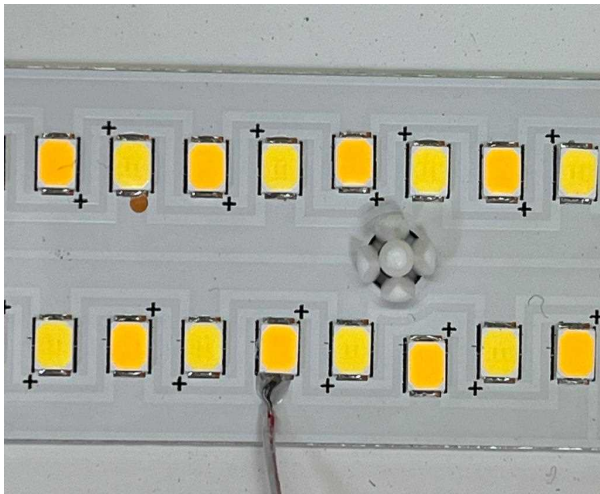
Test Results (Drivers)

Thermocouple Location	Temperature for Driver (°C)		Driver Model Number	Driver Limit Temp (°C)
	Test Result	Test Result (Correct to 25 °C)		
Ambient TEMP	23.6	25.0		
TMP of Location 1	55.7	57.1	SIF 30-I0750 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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