Ningbo TengLi Testing Co., Ltd

2nd floor, Block B, Ningbo Testing and Certification Base, No. 66
Qingyi Road, Ningbo National Hi-Tech Zone, Ningbo, Zhejiang
Tel: 86574-8783 6802
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Energy Star Test Report

For

LEDVANCE LLC

(Brand Name: LEDVANCE, SYLVANIA)

200 BALLARDVALE STREET WILMINGTON, MA 01887

Model name(s):
LEDLD2A900ST9SC3WH

Report Type:	Testing and Report According toENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2
Type of Luminaire:	Downlights
Test Date:	2022-02-10
Report Date:	2022-02-16
Prepared By:	Ningbo TengLi Testing Co., Ltd 2nd floor, Block B, Ningbo Testing and Certification Base, No. 66 Qingyi Road, Ningbo National Hi-Tech Zone, Ningbo, Zhejiang

Test & Report By:

Nick Song

Engineer: Nick Song

Review By:

Garman Mo

Manager: Garman Mo

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

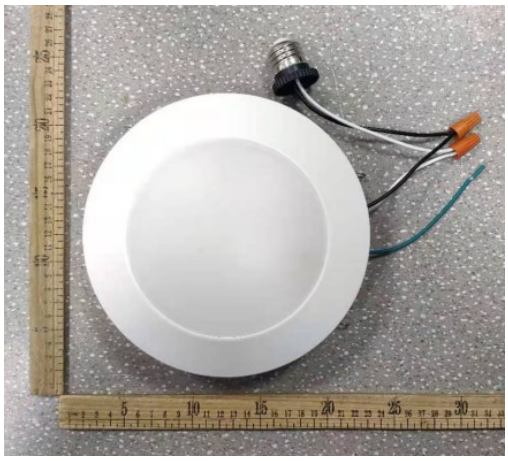
2. This report does not imply product certification, approval, or endorsement by A2LA, or any agency of the Federal Government.

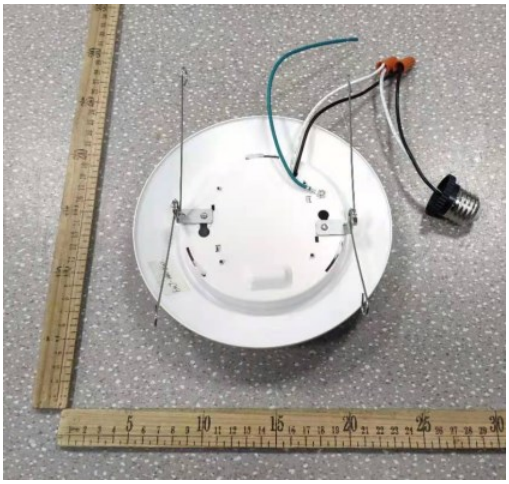
3. This report contains data that are not covered by the A2LA accreditation.

1.1 Product Information:		
Model Number	LEDLD2A900ST9SC3WH	
Remark	Dimmable down to 20% and can be matched to below dimmer brand: LUTRON MACL-153M, DVCL-153P, PD-6WCL, RHCL453P, DVELV-300P, MAELV-600P, 6674, LEVITON,MFG CO INC(E31373),Cat.No.6681	
Representative (Tested) Model	LEDLD2A900ST9SC3WH	
Model Difference	N/A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Downlights	
Directional/Non-directional	Directional	
Mounting Type	Recessed	
Indoor/Outdoor	Indoor	
LED Manufacturer	Bridgelux,Inc.	
LED Model	BXFN-27G-13H-98	
Dimming	Dimmable	
Sample Number	STD211233NB-B1(LEDLD2A900ST9SC3WH)	
Date of Receipt	Feb.09,2022	
Luminaire Aperture (for Downlight)	8	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

1.2 Rated Values:	
Rated Voltage / Frequency	120Vac,60Hz
Nominal Power	15W
Rated Initial Lamp Lumen	--
Declared CCT	2700K/3000K/3500K/4000K/5000K (Color Tunable)

1.3 Product Photos





1.4 Test Specifications:

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. Electrical Parameters
Reference Standard	1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSIC78.377-2015 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring andSpecifying Colour RenderingProperties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA Technical Memorandum on Light Emitting Diode (LED) Sources and Systems 7. ANSI/UL 1598:2008,Luminaire 8. IEC 62301:2011 Household Electrical Appliances – Measurement of Standby Power 9. NEMA 77-2017 Standard for Temporal Light Artifacts: Test Methods and Guidance for Acceptance Criteria
Remark	Below test and data are not covered by A2LA accreditation: - Operating Frequency - Flicker - Noise

1.5 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer Method: Photometricparameters 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 120or 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) Chromaticity Measurement – Sphere-Spectroradiometer Method: Chromaticityparameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25º C ± 1º 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 120or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.
3) Electrical Measurements: Electrical parameters were measured using power meters incorporated in goniophotometeror sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25º C ± 1º C. The sample was operated at 120or 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.

2.1Summary of Test Result

Criteria Item	The Type of Luminaires	Requirement (ES for Luminaires V2.2)	MeasuredValue	Status
Input Wattage	All	≤ Rated Wattage	14.98W	Pass
Luminous Efficacy	Downlights	≥ 55 lm/W	63.08lm/W	Pass
Luminaire Minimum Light Output	Downlights	⩽ 4.5” aperture: 345 lumens > 4.5” aperture: 575 lumens	944.9lm	Pass
Luminaire Zonal Lumen Density Requirement	Downlights	≥75% of total initiallumens within the 0-60° zone	75.8%	Pass
Correlated Color Temperature(CCT)	Solid State	Shall be capable of providing at least one of the following nominal correlated color temperatures (CCTs): • 2700 Kelvin • 3000 Kelvin • 3500 Kelvin • 4000 Kelvin • 5000 Kelvin	2747K Duv=0.0018	Pass
Color Rendering Index (CRI)	Solid State	Ra ≥ 80R9 >0	Ra =92.9 R9 =73	Pass
Color Angular Uniform	Directional Solid State Indoor Luminaires	The variation of chromaticity shall be within 0.006 from the weighted average point on the CIE 1976(u’,v’) diagram	0.0003	Pass
Lumen Maintenance	Solid State Option 1:	L70 lumen maintenance: ≥ 25,000 hours for indoor ≥ 35,000 hours for outdoor ≥50,000 hours for inseparable luminaires	50,000 86.39% >72000	Pass
Light Source Life	Solid State	L70 lumen maintenance: ≥ 25,000 hours for indoor ≥ 35,000 hours for outdoor ≥50,000 hours for inseparable luminaires	50,000 86.39% >72000	Pass

Color Maintenance	Solid State Indoor Luminaires	Δu'v' ≤ 0.007	Max.0.0036 in LM-80 report*	Pass
Source Start Time	Solid State	<750 ms	136ms	Pass
Power Factor	Solid State	Total luminaire input power ≤ 5 watts: PF ≥ 0.5 Total luminaire input power > 5 watts: PF ≥ 0.7	0.9074	Pass
Transient Protection	Solid State	The line transient shall consist of seven strikes of a 100 kHz ring wave, 2.5 kV level, for both common mode and differential mode.	Survival	Pass
Standby Power Consumption	All Luminaires	Luminaires shall not draw power in the off state.	0W	Pass
Operating Frequency	Solid State	Frequency ≥ 120 Hz	120.000Hz	Pass
Maximum In-Situ Source Temperature	Solid State	Maximum permitted Ts temperature for L70≥50,000 hrs ≤105°C	68.5°C	Pass
Maximum Measured Driver Case Temperature	Solid State	shall not exceed the driver manufacturer's maximum recommended temperature during in situ operation. ≤ 105 °C	91.6°C	Pass
Dimming	Solid State	The luminaire and its components shall provide continuous dimming from 100% to 20% of total light output. Luminaire shall not emit noise above 24dBA at 1 meter or less at the minimum output.	Validated	Pass

Warranty Requirements	Solid State	incorporating replaceable drivers: ≥3 years incorporating non-replaceable drivers: ≥5 years	5 years	Pass
CCT	Solid State	Packaging shall clearly describe the nominal color designation in units of Kelvin (e.g. 2700K,3000K).	2700K 3000K 3500K 4000K 5000K	Pass

Note: The information or data with an "*" are provided by the manufacturer.
Our laboratory has no responsibility for the decision of compliance with specification that based on the data or information with the "*".

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2.2.1 Electrical, Photometric and Chromaticity Measurements	IES LM-79 2008

Test date	2022-02-10	Test Ambient:	25±1 ° C
Test Orientation	As intended	Stabilization Time (min)	45
Model Number	LEDLD2A900ST9SC3WH /2700K setting	Total Operating Time(min)	55

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
STD211233 NB-B1	120.0	60	0.1376	14.98	0.9074

Sphere-Spectroradiometer Method: (Self-absorption:1.0225)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Color Rendering Index (CRI)	92.9
R9	73
CCT (K)	2747
Duv	0.0018

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	944.91
Luminous Efficacy (lm/W)	63.08
Beam Angle°	108.4
Center Beam Candle Power (cd)	330

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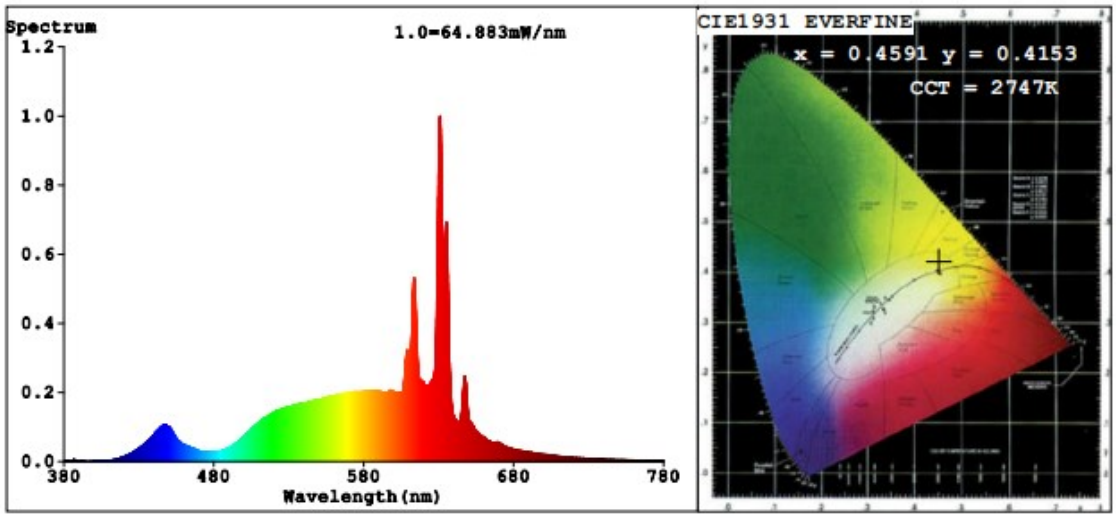
Spectral Power Distribution and Chromaticity Diagram



Colorimetric Parameters

Color Parameters:

Chromaticity Coordinate:x=0.4591 y=0.4153/u'=0.2599 v'=0.5290
CCT=2747K(Duv=0.0018) Dominant WL:Ld =583.4nm WL:Lc = --nm Purity=62.5%
Ratio:R=26.9% G=71.4% B=1.6% Peak WL:Lp=631.0nm FWHM=7.4nm
Render Index:Ra=92.9 AvgR=89.9 TM30:Rf=88 Rg=103

R1 =97	R2 =94	R3 =87	R4 =93	R5 =94	R6 =93	R7 =94	
R8 =91	R9 =73	R10=81	R11=93	R12=78	R13=95	R14=91	R15=93

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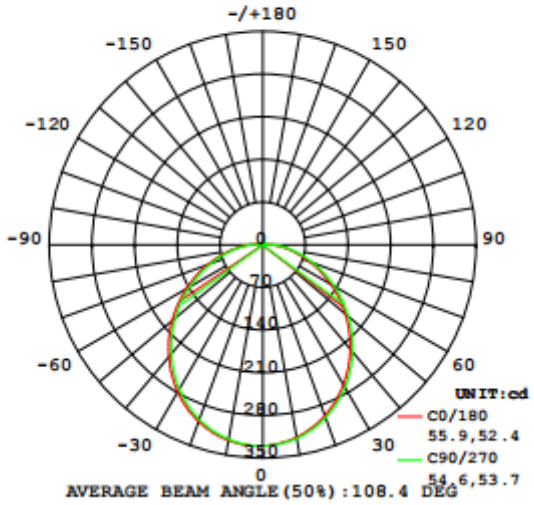
Zonal Lumen Tabulation

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



Zonal Lumen Summary		
Zone	Lumens	%Luminaire
0-30	253.0	26.8%
0-40	411.0	43.5%
0-60	716.2	75.8%
60-90	217.4	23%
70-100	111.7	11.8%
90-120	7.4	0.8%
0-90	933.5	98.8%
90-180	11.3	1.2%
0-180	944.8	100%

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-10	31.2	3.3%	90-100	6.0	0.6%
10-20	88.8	9.4%	100-110	0.7	0.1%
20-30	133.1	14.1%	110-120	0.7	0.1%
30-40	158.0	16.7%	120-130	0.8	0.1%
40-50	161.1	17.1%	130-140	1.2	0.1%
50-60	144.1	15.2%	140-150	0.8	0.1%
60-70	111.7	11.8%	150-160	0.6	0.1%
70-80	71.5	7.6%	160-170	0.4	0%
80-90	34.1	3.6%	170-180	0.1	0%

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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	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330	330			
5	327	327	327	327	328	328	329	329	330	330	329	329	329	328	328	327			
10	321	320	321	322	322	323	324	325	326	326	326	325	324	323	322	321			
15	311	311	311	312	314	315	316	317	319	319	318	317	316	314	313	312			
20	298	298	299	300	302	304	305	307	308	309	308	307	305	303	301	300			
25	283	283	283	285	287	289	292	293	295	295	294	293	291	288	286	284			
30	265	265	266	267	270	272	275	277	279	279	278	276	274	271	269	267			
35	245	245	246	248	250	253	256	258	260	261	259	257	255	252	249	247			
40	223	223	224	226	229	232	235	237	240	240	239	236	234	231	228	226			
45	201	201	202	204	207	210	213	215	218	218	216	214	211	208	205	203			
50	177	177	178	180	183	186	189	191	194	194	193	190	187	184	181	179			
55	153	153	154	156	159	162	165	167	170	170	168	166	163	160	157	155			
60	129	129	130	132	135	138	141	143	145	145	144	141	138	136	133	131			
65	105	105	106	108	111	114	117	118	121	120	119	117	114	111	109	107			
70	82.3	82.4	83.5	85.3	87.8	90.6	93.1	94.8	96.8	96.5	95.2	93.1	90.6	88.2	86.0	84.3			
75	61.1	61.3	62.3	63.9	66.1	68.6	70.8	72.3	73.9	73.6	72.3	70.4	68.2	66.1	64.2	62.8			
80	42.4	42.5	43.3	44.7	46.6	48.7	50.5	51.8	53.1	52.8	51.7	50.0	48.1	46.4	44.9	43.8			
85	26.6	26.7	27.4	28.4	30.0	31.7	33.2	34.1	35.0	34.8	33.9	32.4	30.9	29.6	28.6	27.7			
90	14.7	14.7	15.2	15.9	16.9	18.1	19.0	19.6	20.6	20.4	19.7	18.5	17.5	16.6	16.0	15.5			
95	1.17	2.57	0.06	7.80	1.85	8.16	0.03	2.19	1.84	0.18	0.00	0.83	0.31	2.88	0.00	0.00			
100	0.31	0.39	0.03	2.45	2.97	2.78	0.03	0.11	0.17	0.08	1.97	3.49	3.36	3.05	0.80	0.14			
105	0.94	0.81	0.18	0.06	0.03	0.04	0.22	1.44	1.69	0.99	0.13	0.05	0.39	0.04	0.15	0.87			
110	0.72	0.54	0.38	0.19	0.27	0.28	0.58	1.16	1.05	0.91	0.25	0.19	0.25	0.23	0.26	0.86			
115	0.78	0.59	0.53	0.40	0.15	0.54	1.03	1.21	1.14	0.85	0.67	0.28	0.02	0.35	0.79	1.01			
120	0.96	0.73	0.68	0.30	0.62	0.60	1.34	1.37	1.22	1.01	0.65	0.44	0.37	0.87	1.20	1.20			
125	1.16	0.88	0.84	0.23	0.77	0.57	1.54	1.41	1.14	0.94	0.74	0.14	0.62	0.32	1.60	1.47			
130	1.37	1.04	0.99	1.10	1.06	0.54	1.94	1.67	1.39	1.04	0.78	0.65	0.98	0.61	1.85	1.68			
135	1.78	1.18	0.56	1.38	1.35	3.79	2.13	1.87	1.59	1.33	0.53	1.05	1.45	3.80	1.62	1.93			
140	1.65	1.04	0.59	1.49	2.13	2.18	1.71	2.00	1.94	1.44	0.65	1.13	1.39	2.58	2.00	3.03			
145	1.13	0.83	0.78	1.61	1.44	2.19	0.28	1.86	1.42	1.09	0.31	1.35	0.41	1.84	0.47	1.52			
150	0.77	0.32	0.73	1.97	1.54	2.16	0.53	1.78	3.28	1.06	0.82	0.55	0.49	0.33	1.20	0.55			
155	0.82	0.80	0.88	0.92	3.18	3.55	1.77	0.45	0.62	0.66	1.37	1.77	0.61	0.38	2.08	1.58			
160	1.70	1.52	0.38	0.99	1.10	1.80	0.58	0.84	1.69	1.64	1.76	1.73	0.89	1.32	1.73	1.66			
165	1.18	1.58	0.42	0.70	0.59	0.44	0.60	0.83	1.76	1.87	2.34	1.60	1.10	2.07	3.53	2.73			
170	0.95	1.44	0.85	0.13	0.67	1.23	2.13	0.86	1.49	1.52	1.55	1.37	0.95	1.35	1.27	1.19			
175	0.87	0.75	0.40	0.63	0.77	0.98	0.73	0.43	0.62	0.64	0.81	0.84	0.55	0.89	0.92	0.83			
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			

2.2.2 Electrical, Photometric and Chromaticity Measurements	IES LM-79 2008

Test date	2022-02-10	Test Ambient:	25±1 ° C
Test Orientation	As intended	Stabilization Time (min)	45
Model Number	LEDLD2A900ST9SC3WH /3000K setting	Total Operating Time(min)	46

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
STD211233 NB-B1	120.0	60	0.1357	14.83	0.9106

Sphere-Spectroradiometer Method: (Self-absorption:1.0226)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Color Rendering Index (CRI)	95.6
R9	84
CCT (K)	3002
Duv	-0.0006
Total Luminous (lm)	983.0
Luminous Efficacy (lm/W)	66.28

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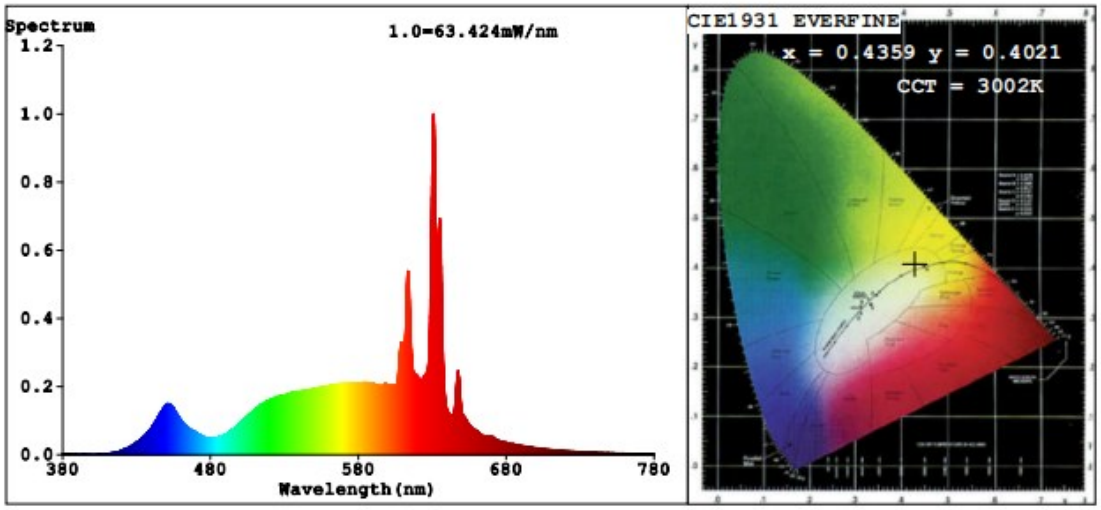

Colorimetric Parameters

Color Parameters:

Chromaticity Coordinate:x=0.4359 y=0.4021/u'=0.2507 v'=0.5204
CCT=3002K(Duv=-0.0006) Dominant WL:Ld =583.0nm WL:Lc = --nm Purity=51.5%
Ratio:R=25.6% G=72.0% B=2.4% Peak WL:Lp=631.0nm FWHM=7.4nm
Render Index:Ra=95.6 AvgR=93.4 TM30:Rf=91 Rg=104

R1 =100	R2 =96	R3 =90	R4 =94	R5 =98	R6 =96	R7 =96	
R8 =95	R9 =84	R10=88	R11=93	R12=82	R13=99	R14=92	R15=98

2.2.3 Electrical, Photometric and Chromaticity Measurements	IES LM-79 2008

Test date	2022-02-10	Test Ambient:	25±1 ° C
Test Orientation	As intended	Stabilization Time (min)	45
Model Number	LEDLD2A900ST9SC3WH /3500K setting	Total Operating Time(min)	46

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
STD211233 NB-B1	120.0	60	0.1338	14.70	0.9155

Sphere-Spectroradiometer Method: (Self-absorption:1.0227)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Color Rendering Index (CRI)	96.6
R9	94
CCT (K)	3512
Duv	-0.0016
Total Luminous (lm)	1038.0
Luminous Efficacy (lm/W)	70.61

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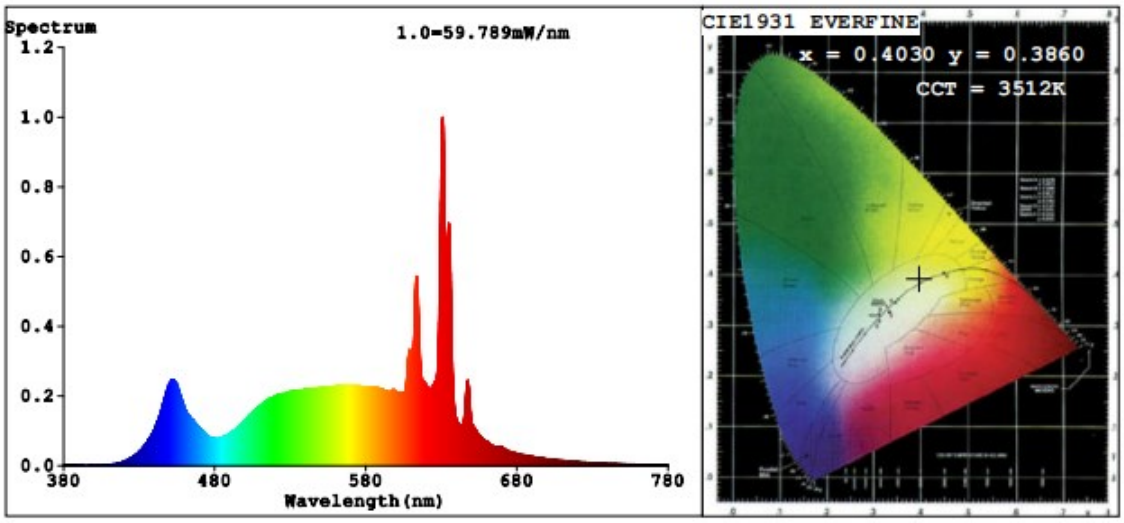
Spectral Power Distribution and Chromaticity Diagram



Colorimetric Parameters

Color Parameters:

Chromaticity Coordinate:x=0.4030 y=0.3860/u'=0.2362 v'=0.5089
CCT=3512K(Duv=-0.0016) Dominant WL:Ld =581.5nm WL:Lc = --nm Purity=36.8%
Ratio:R=23.2% G=73.5% B=3.3% Peak WL:Lp=631.0nm FWHM=7.4nm
Render Index:Ra=96.6 AvgR=94.8 TM30:Rf=93 Rg=104

R1 =98	R2 =98	R3 =91	R4 =95	R5 =100	R6 =96	R7 =97	
R8 =99	R9 =94	R10=91	R11=92	R12=80	R13=99	R14=93	R15=99

2.2.4 Electrical, Photometric and Chromaticity Measurements	IES LM-79 2008

Test date	2022-02-10	Test Ambient:	25±1 ° C
Test Orientation	As intended	Stabilization Time (min)	45
Model Number	LEDLD2A900ST9SC3WH /4000K setting	Total Operating Time(min)	46

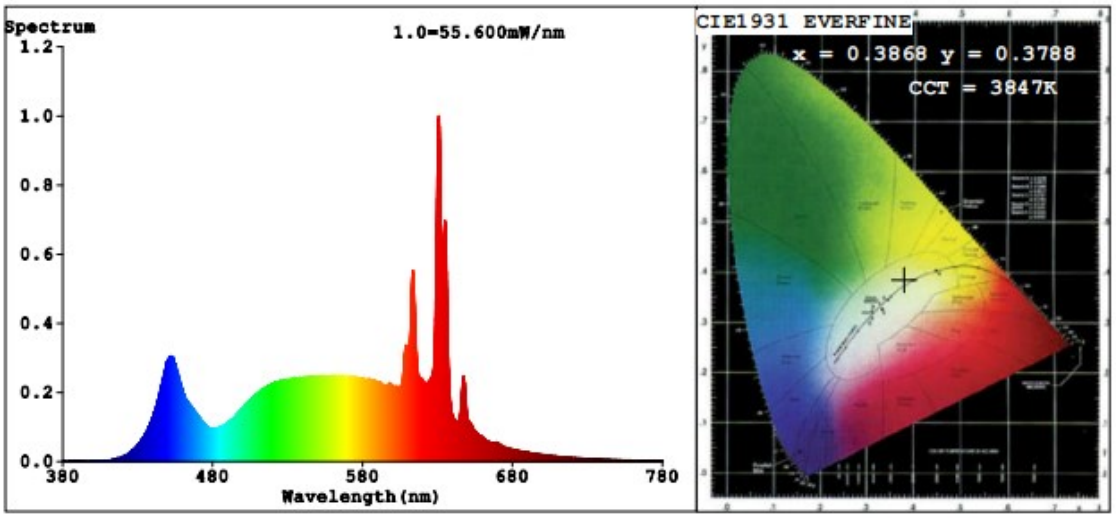
Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
STD211233 NB-B1	120.0	60	0.1333	14.68	0.9176

Sphere-Spectroradiometer Method: (Self-absorption:1.0228)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Color Rendering Index (CRI)	96.7
R9	96
CCT (K)	3847
Duv	-0.0008
Total Luminous (lm)	1041.0
Luminous Efficacy (lm/W)	70.91

Spectral Power Distribution and Chromaticity Diagram



Colorimetric Parameters

Color Parameters:

Chromaticity Coordinate:x=0.3868 y=0.3788/u'=0.2284 v'=0.5034
CCT=3847K(Duv=-0.0008) Dominant WL:Ld =580.1nm WL:Lc = --nm Purity=29.8%
Ratio:R=21.7% G=74.5% B=3.7% Peak WL:Lp=631.0nm FWHM=7.4nm
Render Index:Ra=96.7 AvgR=94.8 TM30:Rf=93 Rg=103

R1 =98	R2 =98	R3 =91	R4 =96	R5 =99	R6 =95	R7 =98	
R8 =99	R9 =96	R10=91	R11=93	R12=77	R13=99	R14=93	R15=98

2.2.5 Electrical, Photometric and Chromaticity Measurements	IES LM-79 2008

Test date	2022-02-10	Test Ambient:	25±1 ° C
Test Orientation	As intended	Stabilization Time (min)	45
Model Number	LEDLD2A900ST9SC3WH /5000K setting	Total Operating Time(min)	46

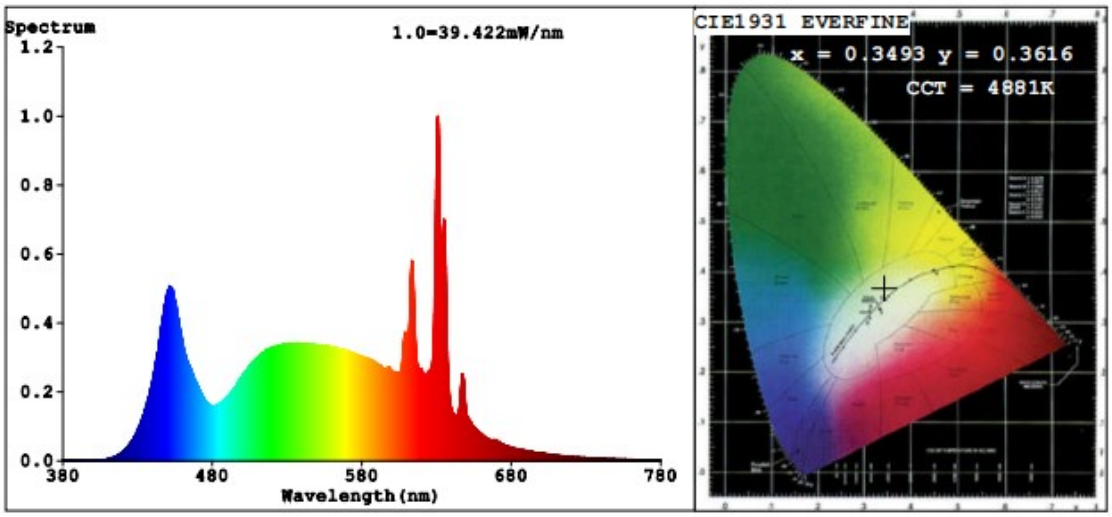
Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
STD211233 NB-B1	120.0	60	0.1360	14.85	0.9099

Sphere-Spectroradiometer Method: (Self-absorption:1.0229)(4π geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Color Rendering Index (CRI)	95.0
R9	85
CCT (K)	4881
Duv	0.0033
Total Luminous (lm)	964.0
Luminous Efficacy (lm/W)	64.91

Spectral Power Distribution and Chromaticity Diagram



Colorimetric Parameters

Color Parameters:

Chromaticity Coordinate:x=0.3493 y=0.3616/u'=0.2104 v'=0.4901
CCT=4881K(Duv=0.0033) Dominant WL:Ld =571.3nm WL:Lc = --nm Purity=13.3%
Ratio:R=18.1% G=77.2% B=4.7% Peak WL:Lp=631.0nm FWHM=7.5nm
Render Index:Ra=95.0 AvgR=91.9 TM30:Rf=93 Rg=101

R1 =97	R2 =95	R3 =91	R4 =96	R5 =94	R6 =92	R7 =98	
R8 =96	R9 =85	R10=85	R11=94	R12=69	R13=96	R14=94	R15=95

2.3 Color Spatial Uniformity	IES LM-79 2008 ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2

Test Data:

Test date	2022-02-10	Test Ambient	25±1 ° C
Sample No.		Maximum Δu'v'	
STD211233NB-B1		0.0003	

Gamma\C	CIE u'	CIE v'	du'v'	CIE u'	CIE v'	du'v'
-55	0.26	0.5299	0.0002	0.26	0.5298	0.0001
-54	0.2599	0.5299	0.0002	0.26	0.5298	0.0001
-53	0.2599	0.5299	0.0002	0.26	0.5298	0.0001
-52	0.2599	0.5299	0.0002	0.2599	0.5298	0.0001
-51	0.2598	0.5298	0.0002	0.26	0.5298	0.0001
-50	0.2598	0.5299	0.0003	0.26	0.5297	0
-49	0.2598	0.5298	0.0002	0.2599	0.5297	0.0001
-48	0.2599	0.5299	0.0002	0.2599	0.5297	0.0001
-47	0.2599	0.5298	0.0001	0.26	0.5297	0
-46	0.2599	0.5298	0.0001	0.26	0.5297	0
-45	0.2598	0.5298	0.0002	0.26	0.5297	0
-44	0.2598	0.5298	0.0002	0.2599	0.5297	0.0001
-43	0.2598	0.5298	0.0002	0.2599	0.5297	0.0001
-42	0.2598	0.5298	0.0002	0.2599	0.5297	0.0001
-41	0.2598	0.5298	0.0002	0.2599	0.5297	0.0001
-40	0.2597	0.5298	0.0003	0.26	0.5297	0
-39	0.2598	0.5298	0.0002	0.2599	0.5297	0.0001
-38	0.2598	0.5298	0.0002	0.2599	0.5297	0.0001
-37	0.2598	0.5298	0.0002	0.2599	0.5297	0.0001
-36	0.2598	0.5298	0.0002	0.2599	0.5297	0.0001
-35	0.2598	0.5298	0.0002	0.2599	0.5297	0.0001
-34	0.2598	0.5298	0.0002	0.2599	0.5297	0.0001
-33	0.2598	0.5298	0.0002	0.26	0.5297	0
-32	0.2598	0.5298	0.0002	0.26	0.5297	0
-31	0.2598	0.5297	0.0002	0.26	0.5297	0
-30	0.2598	0.5298	0.0002	0.26	0.5297	0
-29	0.2598	0.5298	0.0002	0.26	0.5297	0
-28	0.2598	0.5298	0.0002	0.26	0.5297	0
-27	0.2598	0.5298	0.0002	0.2599	0.5297	0.0001

-26	0.2598	0.5298	0.0002	0.26	0.5297	0
-25	0.2598	0.5298	0.0002	0.2599	0.5297	0.0001
-24	0.2598	0.5298	0.0002	0.2599	0.5297	0.0001
-23	0.2598	0.5297	0.0002	0.2599	0.5297	0.0001
-22	0.2599	0.5298	0.0001	0.2599	0.5297	0.0001
-21	0.2599	0.5298	0.0001	0.26	0.5297	0
-20	0.2599	0.5298	0.0001	0.26	0.5297	0
-19	0.2599	0.5298	0.0001	0.26	0.5297	0
-18	0.2599	0.5298	0.0001	0.26	0.5297	0
-17	0.2599	0.5298	0.0001	0.2601	0.5297	0.0001
-16	0.2598	0.5297	0.0002	0.26	0.5297	0
-15	0.2599	0.5298	0.0001	0.26	0.5297	0
-14	0.2599	0.5298	0.0001	0.2601	0.5297	0.0001
-13	0.2599	0.5298	0.0001	0.2601	0.5297	0.0001
-12	0.2599	0.5297	0.0001	0.2601	0.5297	0.0001
-11	0.2599	0.5298	0.0001	0.26	0.5297	0
-10	0.2599	0.5298	0.0001	0.2601	0.5297	0.0001
-9	0.2599	0.5298	0.0001	0.26	0.5297	0
-8	0.26	0.5297	0	0.26	0.5297	0
-7	0.26	0.5298	0.0001	0.26	0.5297	0
-6	0.2599	0.5298	0.0001	0.26	0.5297	0
-5	0.2599	0.5297	0.0001	0.26	0.5297	0
-4	0.26	0.5298	0.0001	0.26	0.5297	0
-3	0.26	0.5297	0	0.26	0.5298	0.0001
-2	0.26	0.5297	0	0.26	0.5297	0
-1	0.2599	0.5297	0.0001	0.26	0.5298	0.0001
0	0.26	0.5297	0	0.26	0.5297	0
1	0.2599	0.5297	0.0001	0.26	0.5297	0
2	0.26	0.5297	0	0.2601	0.5297	0.0001
3	0.2599	0.5298	0.0001	0.26	0.5298	0.0001
4	0.2601	0.5298	0.0001	0.26	0.5297	0
5	0.26	0.5298	0.0001	0.26	0.5297	0
6	0.26	0.5297	0	0.26	0.5297	0
7	0.26	0.5297	0	0.2601	0.5297	0.0001
8	0.26	0.5298	0.0001	0.26	0.5297	0
9	0.26	0.5298	0.0001	0.26	0.5297	0
10	0.26	0.5298	0.0001	0.26	0.5297	0
11	0.26	0.5298	0.0001	0.2601	0.5297	0.0001
12	0.26	0.5298	0.0001	0.26	0.5297	0
13	0.26	0.5298	0.0001	0.26	0.5297	0
14	0.2601	0.5297	0.0001	0.26	0.5298	0.0001

15	0.26	0.5298	0.0001	0.26	0.5298	0.0001
16	0.26	0.5297	0	0.26	0.5297	0
17	0.26	0.5298	0.0001	0.26	0.5298	0.0001
18	0.26	0.5298	0.0001	0.2601	0.5297	0.0001
19	0.2601	0.5297	0.0001	0.2601	0.5297	0.0001
20	0.26	0.5297	0	0.26	0.5297	0
21	0.26	0.5297	0	0.26	0.5298	0.0001
22	0.26	0.5298	0.0001	0.26	0.5297	0
23	0.26	0.5298	0.0001	0.26	0.5298	0.0001
24	0.2601	0.5298	0.0001	0.26	0.5297	0
25	0.26	0.5298	0.0001	0.26	0.5298	0.0001
26	0.26	0.5298	0.0001	0.26	0.5298	0.0001
27	0.26	0.5298	0.0001	0.26	0.5297	0
28	0.26	0.5298	0.0001	0.26	0.5297	0
29	0.26	0.5298	0.0001	0.26	0.5298	0.0001
30	0.2601	0.5297	0.0001	0.26	0.5298	0.0001
31	0.26	0.5298	0.0001	0.26	0.5297	0
32	0.2601	0.5297	0.0001	0.2599	0.5298	0.0001
33	0.2601	0.5297	0.0001	0.2599	0.5297	0.0001
34	0.2601	0.5297	0.0001	0.2599	0.5297	0.0001
35	0.26	0.5297	0	0.2599	0.5298	0.0001
36	0.2601	0.5298	0.0001	0.2599	0.5297	0.0001
37	0.26	0.5298	0.0001	0.26	0.5297	0
38	0.26	0.5298	0.0001	0.2599	0.5297	0.0001
39	0.2601	0.5297	0.0001	0.2599	0.5298	0.0001
40	0.2601	0.5298	0.0001	0.2599	0.5297	0.0001
41	0.26	0.5298	0.0001	0.2599	0.5297	0.0001
42	0.26	0.5297	0	0.2599	0.5297	0.0001
43	0.26	0.5298	0.0001	0.2599	0.5297	0.0001
44	0.2599	0.5298	0.0001	0.2598	0.5297	0.0002
45	0.2599	0.5298	0.0001	0.2599	0.5297	0.0001
46	0.2599	0.5298	0.0001	0.2599	0.5297	0.0001
47	0.26	0.5298	0.0001	0.2599	0.5297	0.0001
48	0.26	0.5297	0	0.2598	0.5297	0.0002
49	0.26	0.5298	0.0001	0.2599	0.5298	0.0001
50	0.26	0.5298	0.0001	0.2599	0.5297	0.0001
51	0.2599	0.5298	0.0001	0.2599	0.5297	0.0001
52	0.26	0.5298	0.0001	0.2598	0.5297	0.0002
53	0.26	0.5298	0.0001	0.2598	0.5298	0.0002
54	0.26	0.5297	0	0.2598	0.5297	0.0002
55	0.26	0.5298	0.0001	0.2598	0.5298	0.0002

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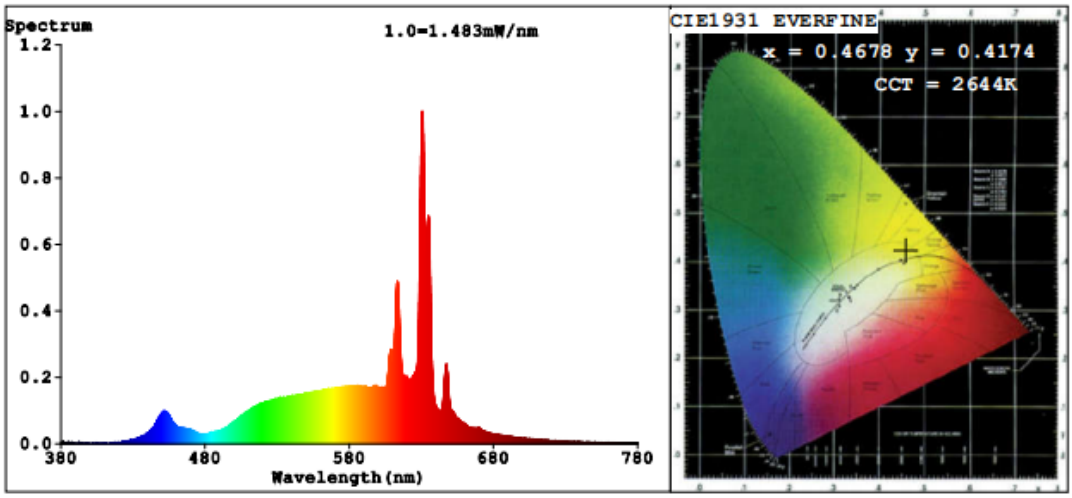
Fax: 86574-87835902

2.4 Electrical and Photometric Measurements, with dimming	IES LM-79 2008 ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2

Test date	2022-02-10		Test Ambient:	25±1 ° C
Dimmer Technology			Forward phase-cut	
Sample No.			Maximum Level	Minimum Level
STD211233NB-B1	Input: 120.0 V / 60 Hz	Light outout (Lumen)	916.9	17.33
		Percentage	97.04%	1.83%



Color Parameters:

Chromaticity Coordinate:x=0.4678 y=0.4174/u'=0.2646 v'=0.5311
CCT=2644K(Duv=0.0018) Dominant WL:Ld =583.9nm WL:Lc = --nm Purity=65.7%
Ratio:R=28.3% G=69.8% B=1.8% Peak WL:Lp=630.7nm FWHM=7.4nm
Render Index:Ra=96.3 AvgR=94.0 TM30:Rf=92 Rg=102

R1 =98	R2 =97	R3 =89	R4 =95	R5 =99	R6 =98	R7 =98	
R8 =96	R9 =85	R10=90	R11=92	R12=83	R13=99	R14=92	R15=98

The luminaires [can] ~~[can not]~~ provide less than 20% of total light output with continuous dimmer.

Dimming Way	Peak Noise Reading (dBA)	Test Condition	Distance between the microphone and the UUT
LUTRON MACL-153M	20.3	Dimmer adjusted to lowest light output	< 1 m

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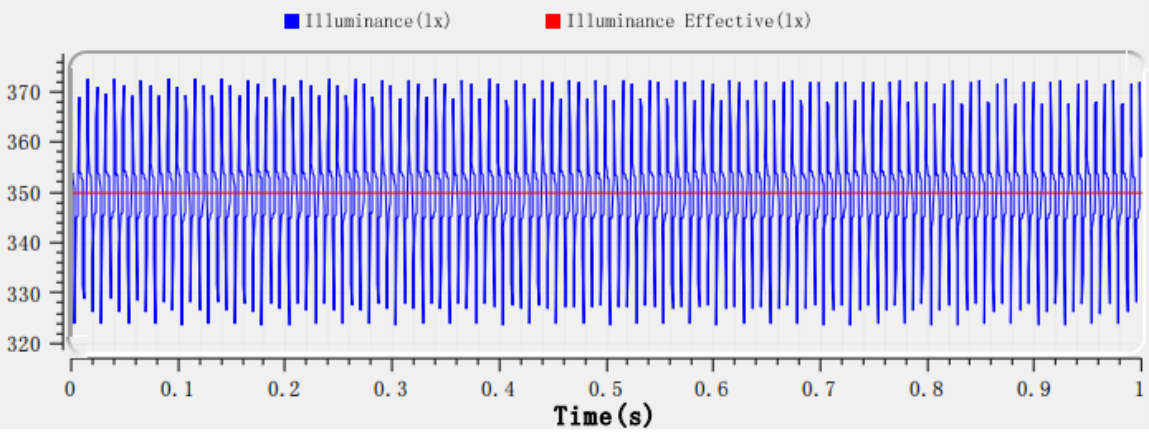
2.5Flicker	NEMA 77-2017 ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2
Noted: This test and data are not covered by A2LA accreditation	

Dimming Technology	Forward phase-cut
Sample No.	STD211233NB-B1
Dimmer	--

Item	Short Term Flicker Indicator (Pst)	Stroboscopic Visibility Measure (SVM)
Maximum Conduction	0.275	0.128
Intermediate Conduction	1.327	0.014
Minimum Conduction	0.000	0.153

2.6Operating Frequency	ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2
Noted: This test and data are not covered by A2LA accreditation	

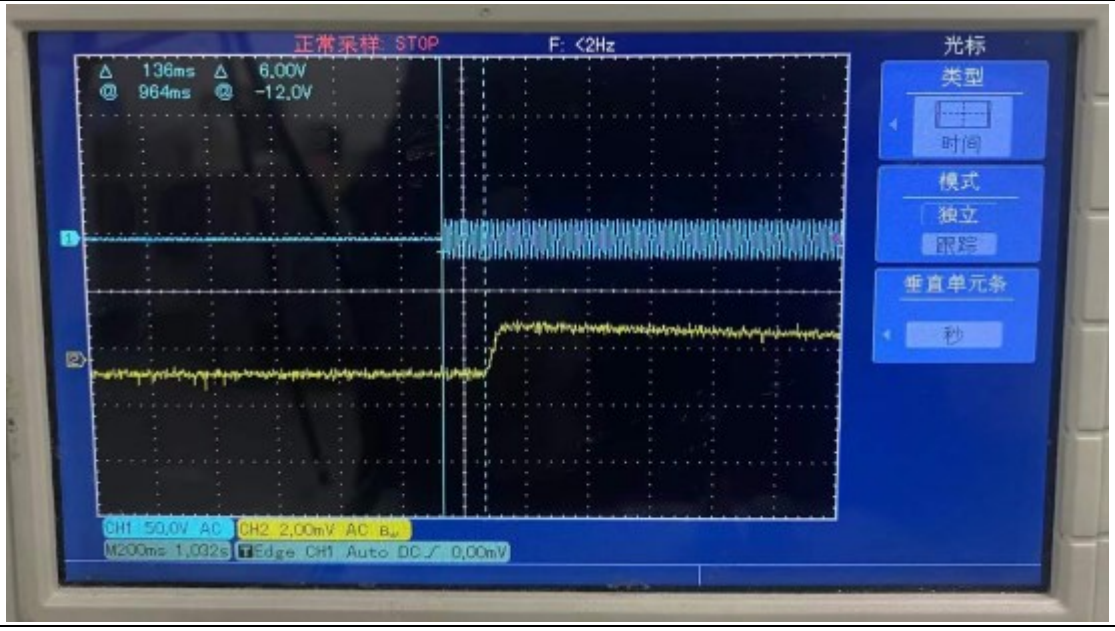
Test date	2022-02-10	Test Ambient:	25±1 ° C
Sample No.	Operating Frequency (Hz)		
STD211233NB-B1	120.000		



2.7Starting Time	ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2

Test date	2022-02-10	Test Ambient:	25±1 º C
Sample No.	**Start Time (ms)**		
STD211233NB-B1	136		

Graph (Start Time):



2.8 Transient Protection Test	ANSI/IEEE C62.41 ENERGY STAR® Program Requirements for Luminaires – Version 2.2

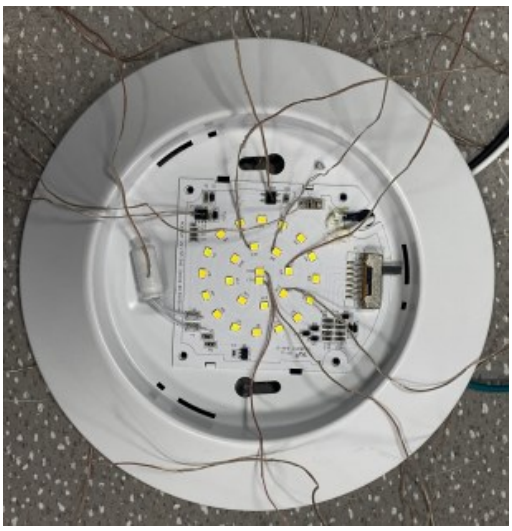
Test voltage: 120V,60Hz

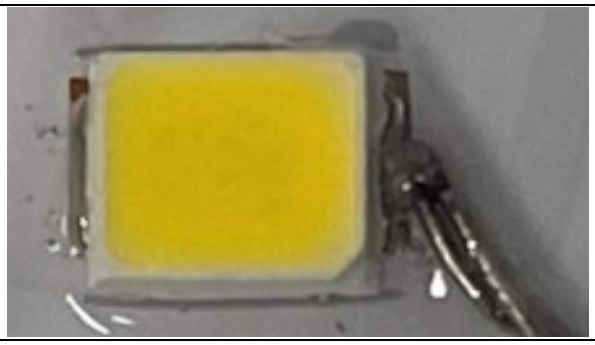
Test date	2022-02-10	Test Ambient	25±1 º C
Sample No.		Transient Protection Test - Seven Strikes	
STD211233NB-B1		Survival	

2.9In-Situ Temperature Measurement Test (ISTMT)	ANSI/UL 1598:2008

Test date	2022-02-10	Test Ambient		25.1 º C
Input Vol./Frequency	120 V / 60 Hz	Output Current of Single LED (mA)		88.00
Sample No.	LED Package Model	Maximum Measured LED Ts Point Temperature (°C)	Maximum permitted Ts temperature for L70≥ 50,000 hrs (°C)	
STD211233NB-B1	BXFN-27G-13H-98	68.5	105	

In-Situ Picture - Ts:

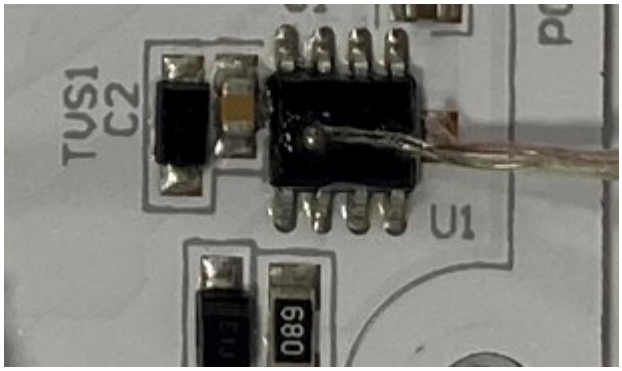




2.10Maximum Measured Ballast or Driver Case Temperature	UL1598-2008, 3rd Edition

Test date	2022-02-10	Test Ambient	25.1 º C
Sample No.	Maximum Measured Driver Case Temperature (°C)	Maximum Driver Case Temperature Limited (°C)	
STD211233NB-A1	91.6	105	

In-Situ Picture - Ts:



2.10Off-State Power Consumption:	ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2

Test date	2022-02-10	Test Ambient:	25±1 ° C
Model Number	LEDLD2A900ST9SC3WH	Stabilization Time (min)	90

Electrical Measurement – when the luminaires turned off:

Sample No.	Power (W)
STD211233NB-B1	0

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-702	2 meter Integrating Sphere	Verified by D204 standard lamp	
ST-R-701	Spectral analysis system HAAS-1200	Verified by D204 standard lamp	
ST-R-703	Standard Lamp D204	2021-01-15	2022-01-14
ST-R-704	Power Meter for Integrating Sphere	2022-01-03	2023-01-02
ST-R-714	Goniophotometer system	Verified by D908S standard lamp	
ST-R-710	Standard Lamp D908S	2021-01-15	2022-01-14
ST-R-711	Power Meter for Goniophotometer	2022-01-03	2023-01-02
ST-R-720	Digital Luxmeter	2022-01-03	2023-01-02
ST-R-622	Oscillograph	2022-01-03	2023-01-02
ST-R-721	EMS61000-12C	2022-01-03	2023-01-02
ST-R-725	LFA-3000	2022-01-03	2023-01-02
ST-R-607	Temperature Tester	2022-01-03	2023-01-02

Uncertainty(K=2):
Photometric Measurement (Sphere):3.94%
Chromaticity Measurement(Sphere):48.2K
Photometric Measurement(Goniophotometer):3.96%

****** END OF DATASHEET PACKAGE ******