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## LM-79-08 Test Report

For

**LEDVANCE LLC**

**(Brand Name: LEDVANCE, SYLVANIA)**

200 BALLARDVALE STREET WILMINGTON, MA 01887

**Model name(s):**  
**LEDLD2A1200ST9SC3WH**

**Report Type:** Testing and Report According to IES LM-79-2008

**Type of  
Luminaire:** Downlights

**Report Date:** 2022-02-17  
Ningbo TengLi Testing Co., Ltd

**Prepared By:** 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.



1.1 Product Information:		
Model Number	LEDLD2A1200ST9SC3WH	
Remark	N/A	
Representative (Tested) Model	LEDLD2A1200ST9SC3WH	
Model Difference	N/A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Downlights	
LED Manufacturer	Bridgelux, Inc	
LED Model	BXFN-27G-13H-98	
Dimming	Dimmable	
Sample Number	STD211233NB-C1	
Date of Receipt	Jan.18,2022	
Luminaire Aperture (for Downlight Retrofits)	--	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	16W
Rated Initial Lamp Lumen	--
Declared CCT	2700K/3000K/3500K/4000K/5000K (Color Tunable)



### 1.3 Test Specifications:

Test item	<ol style="list-style-type: none"><li>1. Total Luminous Flux</li><li>2. Luminous Distribution Intensity</li><li>3. Luminous Efficacy</li><li>4. Correlated Color Temperature</li><li>5. Color Rendering Index</li><li>6. Chromaticity Coordinate</li><li>7. Electrical Parameters</li></ol>
Reference Standard	<ol style="list-style-type: none"><li>1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products</li><li>2. ANSI C78.377-2015 Specifications for the Chromaticity of Solid State Lighting Products</li><li>3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</li><li>4. CIE 15-2004 Technical Report Colorimetry</li><li>5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source</li></ol>

### 1.4 Test Methods

#### 1) Photometric and Light Distribution Measurement – Goniophotometer Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  horizontal intervals.

#### 2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

Chromaticity 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 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 120 or 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 goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.



### 2.1.1 Electrical, Photometric and Chromaticity Measurements

Test date	2022-01-19	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	45
Model Number	LEDLD2A1200ST9SC3WH /2700K setting	Total Operating Time(min)	55

#### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz )	Current (A)	Power (W)	Power Factor
STD211233 NB-C1	120.0	60	0.1427	15.45	0.9022

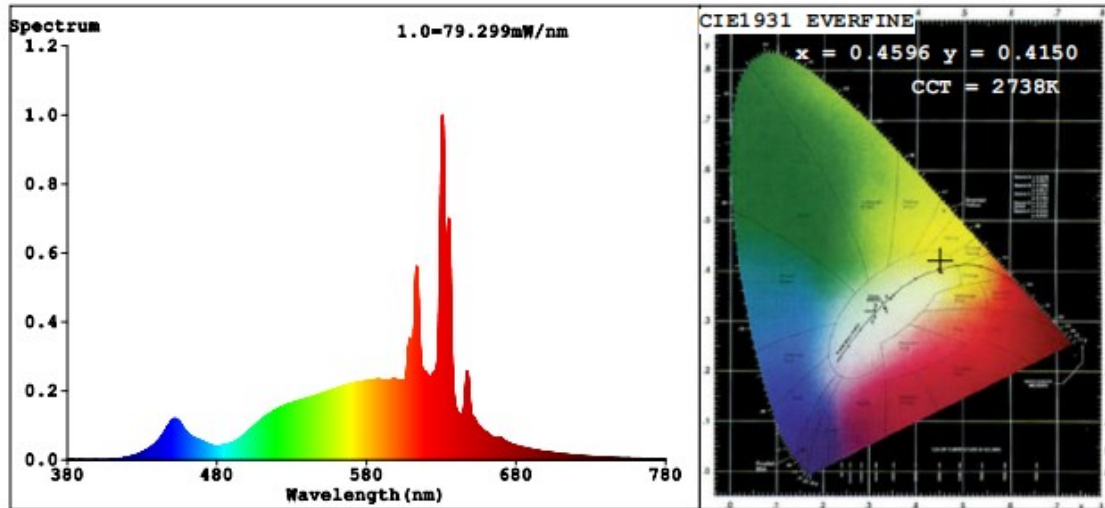
#### Chromaticity Measurement - Sphere-Spectroradiometer Method: (Self-absorption:1.0231)(4 $\pi$ geometry):

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	2738
Duv	0.0016
Chromaticity (x, y)	x=0.4596 y=0.4150
Chromaticity (u', v')	u'=0.2604 v'=0.5290
Color Rendering Index (CRI)	92.6
R9	63

#### Photometric Measurement – Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
Total Luminous (lm)	1212.6
Luminous Efficacy (lm/W)	78.47
Beam Angle (°)	108.3
Center Beam Candle Power (cd)	424

## Spectral Power Distribution & Chromaticity Diagram



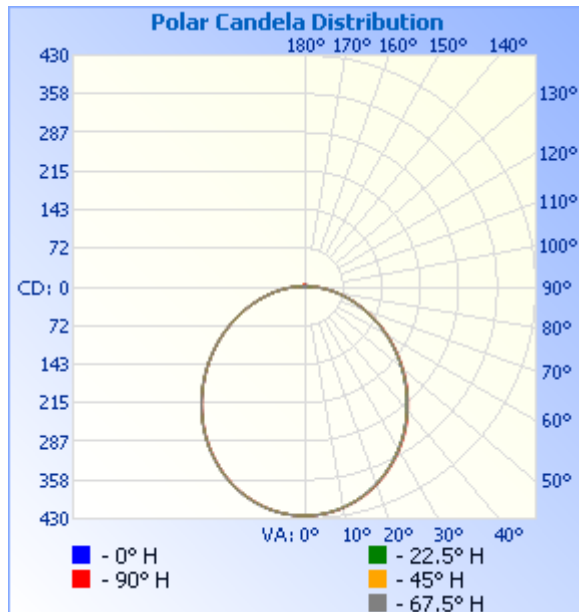
R1 =95   R2 =94   R3 =91   R4 =95   R5 =93   R6 =94   R7 =94  
R8 =86   R9 =63   R10=83   R11=95   R12=77   R13=94   R14=93   R15=91

## Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	%Luminaire
0-30	325.0	26.8%
0-40	527.9	43.5%
0-60	919.4	75.8%
60-90	278.0	22.9%
70-100	143.0	11.8%
90-120	9.9	0.8%
0-90	1,197.4	98.8%
90-180	15.1	1.2%
0-180	1,212.5	100%

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-10	40.1	3.3%	90-100	8.0	0.7%
10-20	114.1	9.4%	100-110	1.0	0.1%
20-30	170.9	14.1%	110-120	1.0	0.1%
30-40	202.8	16.7%	120-130	1.2	0.1%
40-50	206.8	17.1%	130-140	1.6	0.1%
50-60	184.7	15.2%	140-150	1.1	0.1%
60-70	143.0	11.8%	150-160	0.6	0.1%
70-80	91.4	7.5%	160-170	0.5	0%
80-90	43.6	3.6%	170-180	0.1	0%

## Photometric Data



**Illuminance at a Distance**

Center Beam fc	Beam Width	Beam Width
1.47 fc	46.9 ft	47.2 ft
0.37 fc	93.8 ft	94.4 ft
0.16 fc	140.7 ft	141.6 ft
0.09 fc	187.6 ft	188.8 ft
0.06 fc	234.5 ft	236.0 ft
0.04 fc	281.4 ft	283.3 ft

Vert. Spread: 108.1°  
Horiz. Spread: 108.5°

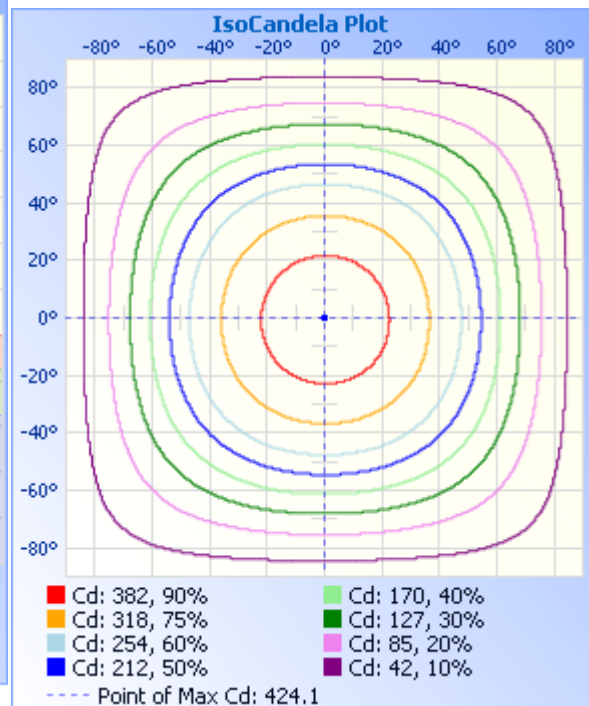
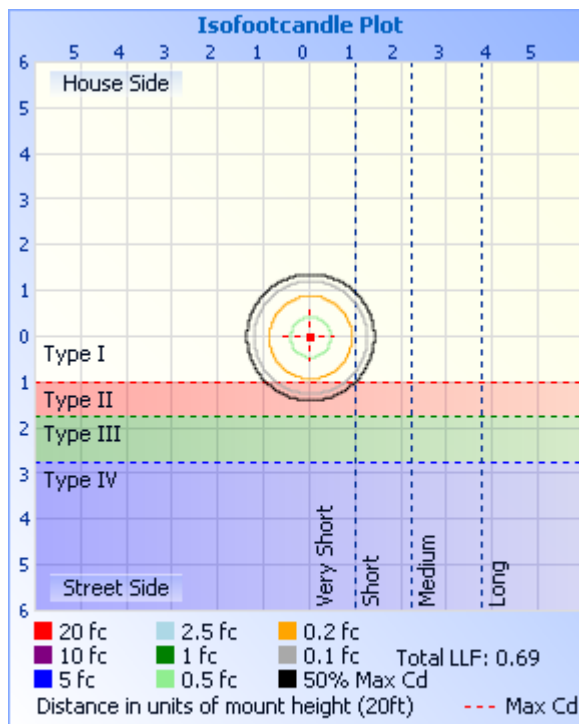




Table--1

UNIT: cd

C (DEG) y (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	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424	424			
5	422	422	422	421	422	422	422	422	422	422	422	422	422	422	422	422			
10	415	415	415	415	415	415	415	415	416	416	416	416	416	416	416	415			
15	404	404	404	404	404	404	404	404	405	405	405	405	405	405	405	405			
20	389	389	389	389	389	389	389	389	390	390	390	390	390	390	390	390			
25	371	371	370	370	370	370	370	371	372	372	372	372	372	372	372	372			
30	349	349	348	348	348	348	348	349	350	350	350	350	350	350	350	350			
35	324	324	323	323	323	323	324	324	325	325	325	325	325	325	325	325			
40	297	296	296	296	296	296	296	297	298	298	298	298	298	298	298	298			
45	268	267	267	267	267	267	267	268	269	269	269	269	269	269	269	269			
50	238	237	237	236	236	237	237	238	239	239	239	239	238	238	238	239			
55	206	206	206	205	205	206	206	207	208	208	207	207	207	207	207	208			
60	175	175	174	174	174	175	175	176	177	176	176	175	175	175	176	176			
65	144	144	143	143	144	144	144	145	146	146	145	144	144	144	144	145			
70	114	114	114	114	114	114	115	115	116	116	115	114	114	114	114	115			
75	85.5	85.6	85.6	85.8	86.1	86.3	86.7	86.9	87.5	87.1	86.4	85.8	85.4	85.4	85.7	86.1			
80	60.2	60.3	60.4	60.5	60.7	60.9	61.3	61.6	62.0	61.6	61.0	60.5	60.1	60.1	60.4	60.7			
85	38.8	39.0	39.0	38.9	39.1	39.3	39.7	39.8	40.1	39.8	39.4	39.0	38.8	38.7	39.0	39.2			
90	22.2	22.1	21.9	21.8	21.9	22.0	22.2	22.3	22.8	22.6	22.4	22.1	22.2	22.3	22.4	22.6			
95	1.22	3.46	0.07	10.3	7.84	9.50	0.02	1.77	0.46	0.00	0.00	4.58	0.08	12.1	0.00	0.00			
100	0.28	0.78	0.11	3.33	3.49	3.24	0.08	0.17	0.30	0.18	1.21	4.06	4.46	3.92	0.13	0.26			
105	2.35	1.79	0.15	0.05	0.05	0.05	0.11	1.34	1.91	1.05	0.15	0.01	0.02	0.02	0.16	1.94			
110	1.78	1.51	0.58	0.30	0.11	0.31	0.52	0.94	1.36	1.43	0.49	0.28	0.14	0.32	0.46	1.78			
115	1.66	1.51	1.05	0.70	0.41	0.68	0.91	1.13	1.46	1.53	1.32	0.61	0.32	0.66	1.07	1.73			
120	1.76	1.67	1.30	0.53	0.78	0.63	1.28	1.44	1.42	1.59	1.74	0.51	0.66	0.40	1.47	1.80			
125	1.95	2.03	1.66	0.16	0.51	0.80	1.66	1.97	1.74	1.64	1.65	0.13	0.01	0.76	1.55	1.74			
130	2.41	2.37	1.95	0.64	1.11	0.57	1.94	2.41	2.26	2.01	1.78	0.67	1.01	0.71	1.74	2.18			
135	2.83	3.74	1.62	1.52	1.27	0.75	1.62	5.67	3.06	4.18	1.35	1.99	1.03	1.05	1.31	2.75			
140	2.94	2.27	2.28	1.74	1.42	1.95	2.09	2.88	2.76	2.22	1.60	1.87	1.40	1.83	1.19	2.86			
145	2.86	1.95	0.57	1.91	1.58	1.97	0.64	2.24	2.38	1.87	0.64	0.54	0.81	0.51	0.36	1.75			
150	2.38	2.07	0.60	2.02	1.73	2.03	0.49	2.15	4.41	3.98	0.88	1.47	0.65	1.84	4.48	0.81			
155	0.80	0.33	0.89	1.65	1.83	1.47	0.58	0.42	0.73	0.71	2.62	1.99	1.14	0.86	2.13	0.95			
160	2.19	2.07	0.29	0.53	0.76	0.51	0.29	1.97	2.21	2.18	2.43	2.26	1.63	1.58	2.18	2.22			
165	4.10	4.56	0.89	0.62	0.54	0.69	0.81	4.24	3.99	4.30	3.02	1.64	1.51	1.59	1.77	2.73			
170	1.75	2.25	0.27	1.48	1.82	1.16	0.41	1.35	2.01	2.10	1.74	1.42	1.78	1.82	1.30	1.40			
175	1.20	0.83	0.43	0.53	0.66	0.61	0.23	0.85	1.24	1.25	1.36	1.23	1.26	1.32	1.16	0.92			
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			



<b>2.1.2 Electrical, Photometric and Chromaticity Measurements</b>	<b>IES LM-79 2008</b>
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Test date	2022-01-19	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	45
Model Number	LEDLD2A1200ST9SC3WH /3000K setting	Total Operating Time(min)	55

**Electrical Measurement:**

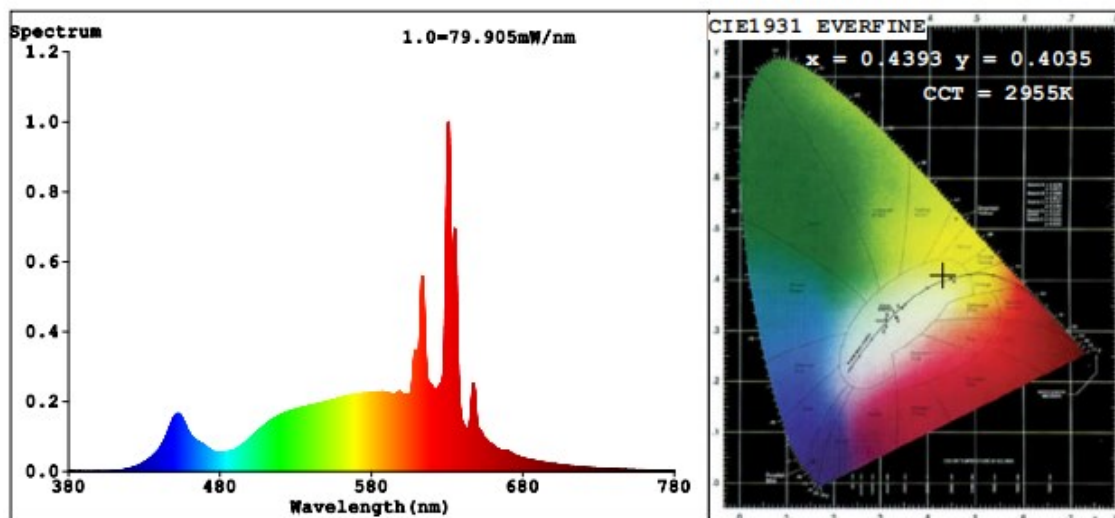
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
STD211233 NB-C1	120.0	60	0.1401	15.30	0.9103

**Sphere-Spectroradiometer Method: (Self-absorption:1.0232)(4 $\pi$  geometry):**

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	2955
Duv	-0.0006
Chromaticity (x, y)	x=0.4393 y=0.4035
Chromaticity (u', v')	u'=0.2524 v'=0.5215
Color Rendering Index (CRI)	95.2
R9	76
Total Luminous (lm)	1247
Luminous Efficacy (lm/W)	81.5



## Spectral Power Distribution and Chromaticity Diagram



R1 =99	R2 =97	R3 =92	R4 =96	R5 =97	R6 =96	R7 =95	
R8 =91	R9 =76	R10=88	R11=95	R12=80	R13=98	R14=93	R15=95



<b>2.1.3 Electrical, Photometric and Chromaticity Measurements</b>	<b>IES LM-79 2008</b>
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Test date	2022-01-19	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	45
Model Number	LEDLD2A1200ST9SC3WH /3500K setting	Total Operating Time(min)	55

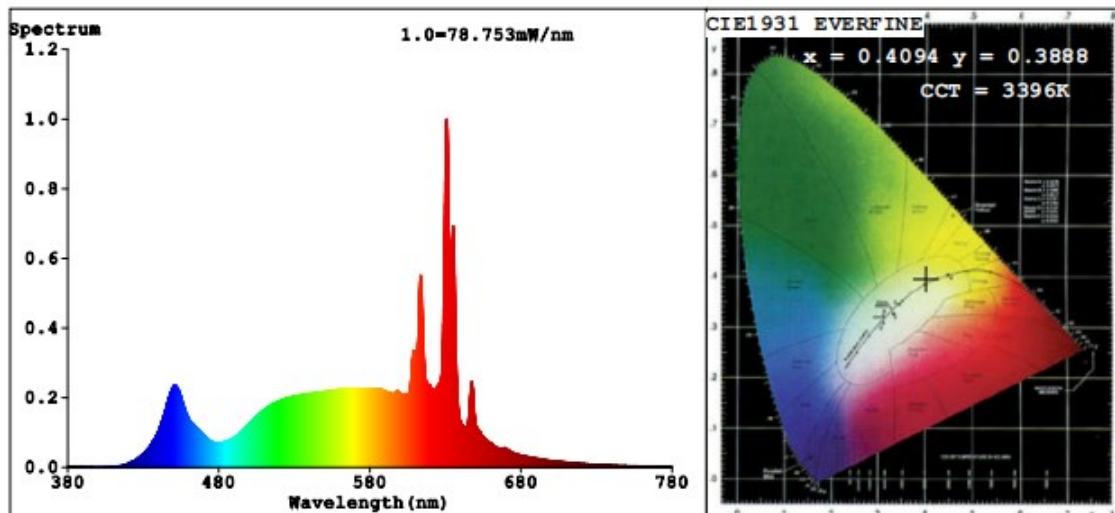
**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
STD211233 NB-C1	120.0	60	0.1382	15.17	0.9146

**Sphere-Spectroradiometer Method: (Self-absorption:1.0233)(4 $\pi$  geometry):**

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3396
Duv	-0.0017
Chromaticity (x, y)	x=0.4094 y=0.3888
Chromaticity (u', v')	u'=0.2392 v'=0.5111
Color Rendering Index (CRI)	96.3
R9	91
Total Luminous (lm)	1295
Luminous Efficacy (lm/W)	85.37

## Spectral Power Distribution and Chromaticity Diagram



R1 =98	R2 =97	R3 =91	R4 =94	R5 =99	R6 =96	R7 =97	
R8 =98	R9 =91	R10=91	R11=92	R12=81	R13=100	R14=93	R15=100



<b>2.1.4 Electrical, Photometric and Chromaticity Measurements</b>	<b>IES LM-79 2008</b>
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Test date	2022-01-19	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	45
Model Number	LEDLD2A1200ST9SC3WH /4000K setting	Total Operating Time(min)	55

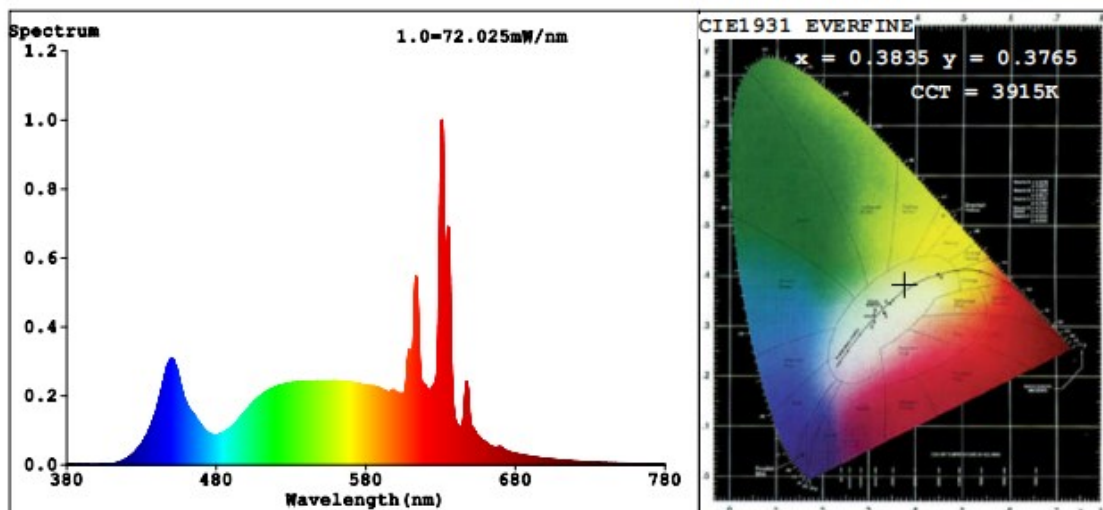
**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
STD211233 NB-C1	120.0	60	0.1392	15.23	0.9120

**Sphere-Spectroradiometer Method: (Self-absorption:1.0234)(4 $\pi$  geometry):**

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	3915
Duv	-0.0010
Chromaticity (x, y)	x=0.3835 y=0.3765
Chromaticity (u', v')	u'=0.2273 v'=0.5019
Color Rendering Index (CRI)	95.3
R9	98
Total Luminous (lm)	1276
Luminous Efficacy (lm/W)	83.77

## Spectral Power Distribution and Chromaticity Diagram



R1 =98	R2 =97	R3 =89	R4 =93	R5 =99	R6 =95	R7 =96
R8 =97	R9 =98	R10=89	R11=91	R12=78	R13=99	R14=92 R15=98



<b>2.1.5 Electrical, Photometric and Chromaticity Measurements</b>	<b>IES LM-79 2008</b>
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Test date	2022-01-19	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	45
Model Number	LEDLD2A1200ST9SC3WH /5000K setting	Total Operating Time(min)	55

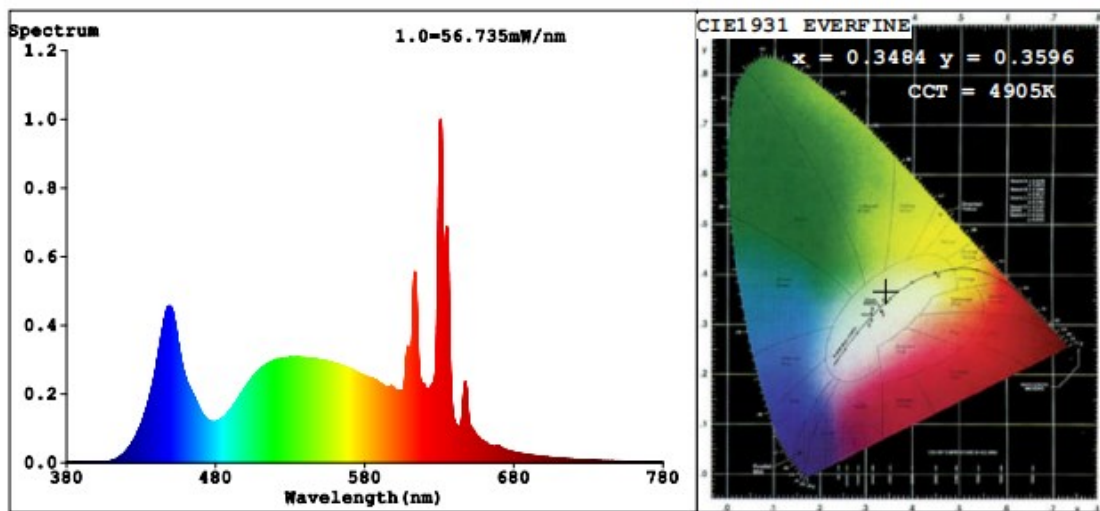
**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
STD211233 NB-C1	120.0	60	0.1423	15.37	0.9001

**Sphere-Spectroradiometer Method: (Self-absorption:1.0235)(4 $\pi$  geometry):**

Parameter	Result
Test Voltage (V)	120
Frequency (Hz)	60
CCT (K)	4956
Duv	0.0027
Chromaticity (x, y)	x=0.3484 y=0.3596
Chromaticity (u', v')	u'=0.2106 v'=0.4890
Color Rendering Index (CRI)	93.6
R9	98
Total Luminous (lm)	1236
Luminous Efficacy (lm/W)	80.40

## Spectral Power Distribution and Chromaticity Diagram



R1 =99	R2 =94	R3 =86	R4 =93	R5 =96	R6 =91	R7 =94
R8 =96	R9 =98	R10=83	R11=91	R12=72	R13=97	R14=92 R15=99



### 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	2022-01-14	2023-01-13
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	2022-01-14	2023-01-13
ST-R-711	Power Meter for Goniophotometer	2022-01-03	2023-01-02
Uncertainty(K=2): Photometric Measurement (Sphere):3.94% Chromaticity Measurement(Sphere):48.2K Photometric Measurement(Goniophotometer):3.96%			



#### 4. Product Photo



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