



Energy Star Test Report

For

L-TECH CORPORATION

(Brand Name: N/A)

Shaogangtou District, Qiaotou Town, Dongguan City

Model name(s):
LMPT420
LMPT440

Report Type: Testing and Report According to ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.1

Type of Luminaire: Downlight retrofits

Report Date: 2019-04-04

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:

Xeon Ren

Engineer: Xeon Ren

Review By:

Johnson Sun

Manager: Johnson Sun

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	LMPT420 LMPT440	
Remark	N/A	
Representative (Tested) Model	LMPT420 LMPT440	
Model Difference	All construction and rating are the same, except Lamp shape	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Downlight retrofits	
LED Manufacturer	Luminus Devices, Inc.	
LED Model	CXM-9	
Dimming	Dimmable	
Sample Number	JCE181204-A1(LMPT420), A11(LMPT440)	
Date of Receipt	Mar.15,2019	
Luminaire Aperture (for Downlight retrofits)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

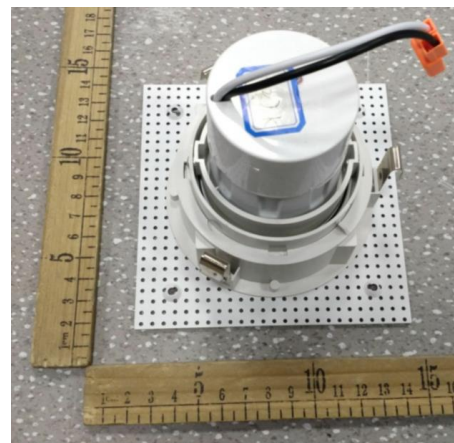
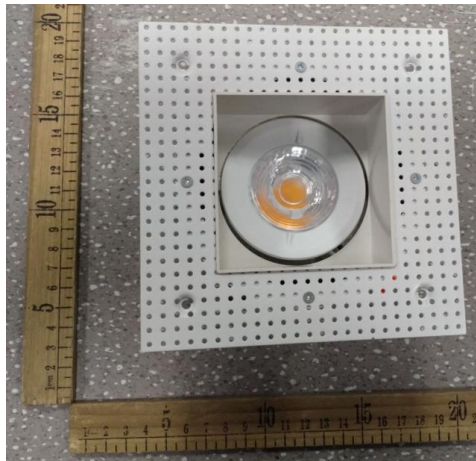
1.2 Rated Values:	
Rated Voltage / Frequency	120Vac, 60Hz
Nominal Power	9W
Rated Initial Lamp Lumen	--
Declared CCT	2700K,3000K,4000K,5000K

1.3 Product Photos

LMPT420



LMPT440





1.4 Test Specifications:

Test item	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems 7. UL1993 4th Edition, Self-Ballasted Lamps and Lamp Adapters 8. ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) – Version 2.1
Reference Work Instruction	QD25
Remark	<p>Below test and data are not covered by A2LA accreditation:</p> <ul style="list-style-type: none"> - Operating Frequency



1.5 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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$, 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 ° vertical intervals and 22.5 ° 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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. 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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. 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 Summary of Test Result

Criteria Item	The Type of Luminaires	Requirement (ES for Luminaires V2.1)	Measured Value	Status
Input Wattage	All	≤ Rated Wattage	LMPT420: 8.505W LMPT440: 8.726W	Pass
Luminous Efficacy	Downlight retrofits	≥60 lm/W	LMPT420: 92.17lm/W LMPT440: 92.01lm/W	Pass
Luminaire Minimum Light Output	Downlight retrofits	≤4.5" aperture: 345 lumens >4.5" aperture: 575 lumens	LMPT420: 783.87lm LMPT440: 802.9lm	Pass
Luminaire Zonal Lumen Density Requirement	Downlight retrofits	≥75% of total initial lumens within the 0-60 °zone	98.5%	Pass
Correlated Color Temperature (CCT)	Solid State	Shall be capable of providing at least one of the following nominal correlated color temperatures (CCTs): <ul style="list-style-type: none"> • 2700 Kelvin • 3000 Kelvin • 3500 Kelvin • 4000 Kelvin • 5000 Kelvin 	LMPT420: 2734K Duv=0.0006 LMPT440: 2762K Duv=0.0011	Pass
Color Rendering Index (CRI)	Solid State	Ra ≥ 80 R9 >0	LMPT420: Ra =95.6 R9 =83 LMPT440: Ra =95.6 R9 =82	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	0.0038	Pass
Lumen Maintenance	Solid State Option 1:	L70 lumen maintenance: ≥ 25,000 hours for indoor ≥ 35,000 hours for outdoor	36,000 82.19% >66000	Pass



		≥ 50,000 hours for inseparable luminaires					
Light Source Life	Solid State	L70 lumen maintenance: ≥ 25,000 hours for indoor ≥ 35,000 hours for outdoor ≥ 50,000 hours for inseparable luminaires	<table border="1"> <tr> <td>36,000</td> </tr> <tr> <td>82.19%</td> </tr> <tr> <td>>66000</td> </tr> </table>	36,000	82.19%	>66000	Pass
36,000							
82.19%							
>66000							
Color Maintenance	Solid State Indoor Luminaires	$\Delta u'v' \leq 0.007$	Max.0.0068 in LM-80 report	Pass			
Source Start Time	Solid State	<750 ms	74.0ms	Pass			
Power Factor	Solid State	Total luminaire input power ≤ 5 watts: PF ≥ 0.5 Total luminaire input power > 5 watts: PF ≥ 0.7	LMPT420: 0.9635 LMPT440: 0.9652	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	120.00Hz	Pass			
Light Source Replaceability	Solid State	LED light engines or retrofit kits shall make use of electrical interconnects that allow for consumer replacement of the engine or kit without the cutting of wires or the use of solder.	Pin connector	Pass			
Driver Replaceability	Solid State: Directional	Drivers shall be accessible and removable by an electrician without the cutting of wires and without damage to the luminaire	N/A	N/A			



		housing, trim, decorative elements or the carpentry (e.g., ceilingdrywall) to which the luminaire is attached.		
Maximum Measured Driver Case Temperature	Solid State	shall not exceed the driver manufacturer's maximum recommended temperature during in situ operation. $\leq 105 \text{ }^{\circ}\text{C}$	57.9 $^{\circ}\text{C}$	Pass
Maximum In-Situ Source Temperature	Solid State	Maximum permitted T_s temperature for $L70 \geq 50,000$ hrs $\leq 105 \text{ }^{\circ}\text{C}$	90.8 $^{\circ}\text{C}$	Pass
Electronic Driver Safety	Solid State: Directional	Demonstrate compliance with ANSI/UL 1310-2010, ANSI/UL 2108-2004, ANSI/UL 8750-2009, as applicable.	Driver safety report has been verified	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
Lighting Toxics Reduction Requirements	Solid State	Luminaires and lamps shall not exceed: 1000 ppm: Mercury, Lead, Hexavalent Chromium, PBB and PBDE 100 ppm: Cadmium	RoHS report has been verified	Pass



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CCT	Solid State	Packaging shall clearly describe the nominal color designation in units of Kelvin (e.g. 2700K, 3000K).	2700K 3000K 4000K 5000K	Pass
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2.2 Electrical, Photometric and Chromaticity Measurements <i>(Refer to Work Instruction QD25)</i>	IES LM-79 2008
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Test date	2019-03-18	Test Ambient:	25.0 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LMPT420		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
JCE181204-A1	120.0	60	0.0735	8.505	0.9635

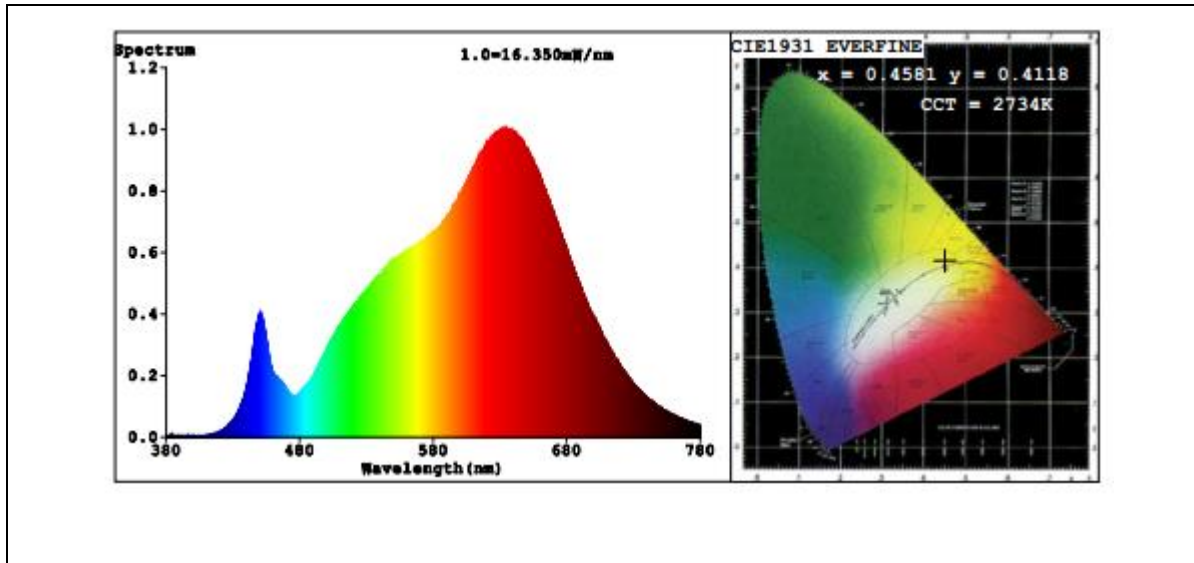
Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	95.6
R9	83
CCT (K)	2734
Duv	0.0006

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	783.87
Luminous Efficacy (lm/W)	92.17
Beam Angle °	31.3
Center Beam Candle Power (cd)	2089

Spectral Power Distribution and Chromaticity Diagram

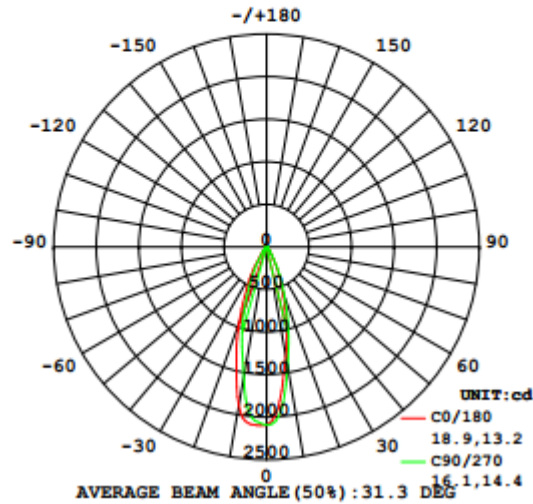


Colorimetric Parameters

Color Parameters:
 Chromaticity Coordinate: $x=0.4581$ $y=0.4118$ / $u'=0.2608$ $v'=0.5276$
 CCT=2734K (Duv=0.0006) Dominant WL:Ld =583.8nm Purity=61.1%
 Ratio:R=26.5% G=71.2% B=2.2% Peak WL:Lp=634.0nm FWHM=154.8nm
 Render Index:Ra=95.6 AvgR=93.6 TM30:Rf=0 Rg=0
 R1 =97 R2 =96 R3 =93 R4 =97 R5 =96 R6 =95 R7 =97
 R8 =93 R9 =83 R10=90 R11=97 R12=83 R13=97 R14=95 R15=95

Zonal Lumen Tabulation

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	672.6	85.9%
0-40	740.7	94.6%
0-60	771.4	98.5%
60-90	12.0	1.5%
70-100	5.8	0.7%
90-120	0.0	0%
0-90	783.4	100%
90-180	0.0	0%
0-180	783.4	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	173.6	22.2%	90-100	0.0	0%
10-20	301.2	38.4%	100-110	0	0%
20-30	197.7	25.2%	110-120	0	0%
30-40	68.2	8.7%	120-130	0.0	0%
40-50	21.3	2.7%	130-140	0.0	0%
50-60	9.3	1.2%	140-150	0.0	0%
60-70	6.2	0.8%	150-160	0.0	0%
70-80	4.4	0.6%	160-170	0.0	0%
80-90	1.4	0.2%	170-180	0.0	0%



Table--1 UNIT: cd

C (DEG) γ (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	2089	2089	2089	2089	2089	2089	2089	2089	2089	2089	2089	2089	2089	2089	2089	2089	
5	1810	1813	1844	1879	1935	1996	2056	2081	2091	2088	2084	2054	2013	1960	1894	1843	
10	1310	1303	1316	1345	1420	1538	1686	1812	1890	1889	1815	1689	1558	1459	1393	1346	
15	900	878	883	926	998	1097	1211	1306	1374	1355	1274	1202	1131	1060	999	957	
20	552	535	538	563	606	682	780	869	952	937	889	822	758	694	637	599	
25	327	316	315	330	359	411	475	529	578	568	537	498	454	419	382	356	
30	155	151	151	158	169	203	254	298	337	328	301	272	242	218	193	176	
35	73.4	71.2	73.2	76.8	80.4	89.1	107	127	138	128	123	115	101	92.2	83.0	79.4	
40	43.2	43.1	42.8	44.7	44.2	47.5	52.2	57.2	61.2	56.7	52.5	50.4	47.9	46.0	45.1	44.4	
45	23.7	23.9	24.3	25.5	23.8	24.2	25.7	26.7	28.6	27.0	26.6	26.4	24.7	24.3	24.5	24.3	
50	14.0	14.2	14.2	15.4	13.4	12.9	12.6	12.6	13.9	14.2	15.2	16.6	15.4	15.2	15.2	14.8	
55	10.7	10.9	11.0	12.1	10.2	9.70	9.30	9.17	9.33	9.51	10.0	11.5	10.3	10.4	10.5	10.6	
60	7.87	8.01	7.90	8.15	7.25	6.94	6.65	6.50	6.75	6.94	7.33	8.59	7.80	7.88	7.82	7.85	
65	7.00	7.13	7.05	6.81	6.35	5.87	5.40	5.13	5.15	5.27	5.58	5.95	6.24	6.50	6.63	6.77	
70	6.09	6.18	6.10	5.88	5.53	5.11	4.72	4.54	4.60	4.72	5.03	5.37	5.63	5.81	5.92	5.99	
75	4.53	4.60	4.57	4.43	4.15	3.85	3.59	3.46	3.59	3.74	3.97	4.21	4.39	4.49	4.53	4.56	
80	2.82	2.87	2.89	2.85	2.72	2.56	2.43	2.35	2.48	2.61	2.77	2.92	3.00	2.97	2.91	2.88	
85	1.37	1.38	1.37	1.33	1.27	1.22	1.18	1.16	1.27	1.33	1.40	1.45	1.45	1.43	1.42	1.44	
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.06	0.01	0.00	0.00	0.00	0.00	0.00	
95	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	
100	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	
105	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	
110	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	
115	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	
120	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	
125	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.01	
130	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	
135	0.01	0.01	0.01	0.02	0.02	0.01	0.00	0.02	0.01	0.01	0.00	0.01	0.02	0.02	0.02	0.02	
140	0.02	0.01	0.00	0.03	0.03	0.02	0.03	0.00	0.01	0.00	0.00	0.02	0.03	0.00	0.00	0.03	
145	0.00	0.00	0.01	0.04	0.04	0.02	0.03	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00	
150	0.00	0.00	0.01	0.04	0.04	0.03	0.02	0.00	0.00	0.00	0.02	0.04	0.00	0.04	0.05	0.02	
155	0.04	0.03	0.00	0.00	0.02	0.01	0.00	0.00	0.01	0.01	0.00	0.03	0.00	0.03	0.04	0.05	
160	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.00	0.01	0.02	0.04	
165	0.06	0.03	0.03	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.02	0.03	0.04	
170	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.02	0.03	
175	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	
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	



2.3 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	IES LM-79 2008
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Test date	2019-03-18	Test Ambient:	25.0 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LMPT440		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
JCE181204-A11	120.0	60	0.0753	8.726	0.9652

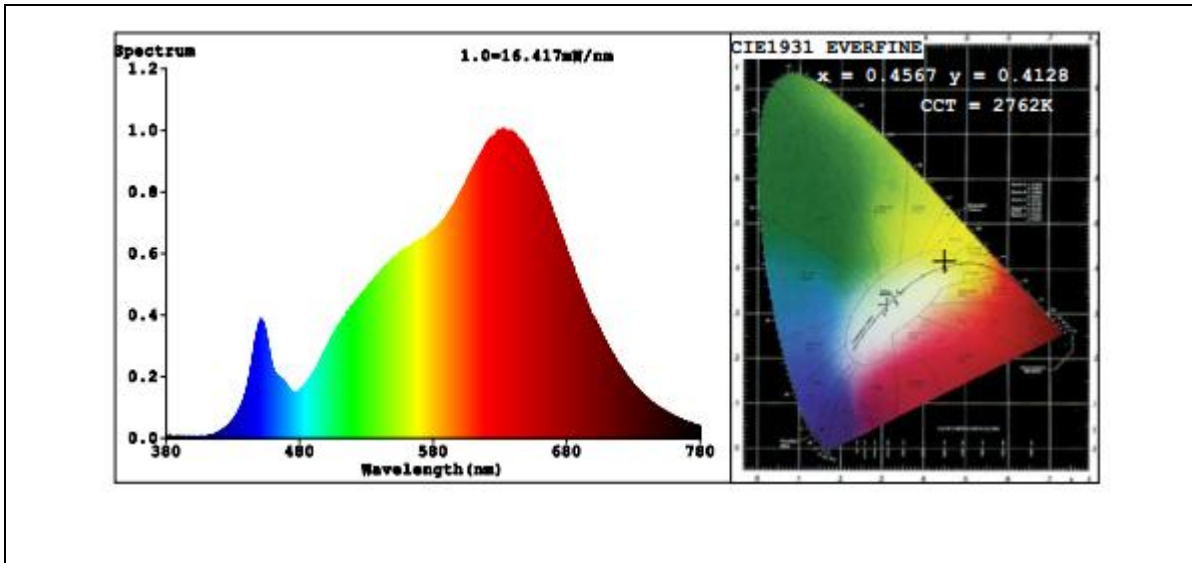
Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	95.6
R9	82
CCT (K)	2762
Duv	0.0011

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	802.9
Luminous Efficacy (lm/W)	92.01

Spectral Power Distribution and Chromaticity Diagram



Colorimetric Parameters

Color Parameters:

Chromaticity Coordinate: $x=0.4567$ $y=0.4128$ $u'=0.2595$ $v'=0.5277$
 CCT=2762K (Duv=0.0011) Dominant WL:Ld =583.5nm Purity=61.0%
 Ratio:R=26.3% G=71.4% B=2.3% Peak WL:Lp=632.4nm FWHM=156.6nm
 Render Index:Ra=95.6 AvgR=93.5 TM30:Rf=0 Rg=0
 R1 =97 R2 =96 R3 =93 R4 =97 R5 =96 R6 =95 R7 =97
 R8 =93 R9 =82 R10=89 R11=97 R12=82 R13=97 R14=95 R15=95



2.4 Color Spatial Uniformity	IES LM-79 2008 ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.1
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Test Data:

Test date	2019-03-18	Test Ambient	25.1 °C
Sample No.	Maximum $\Delta u'v'$		
JCE181204-A1	0.0038		

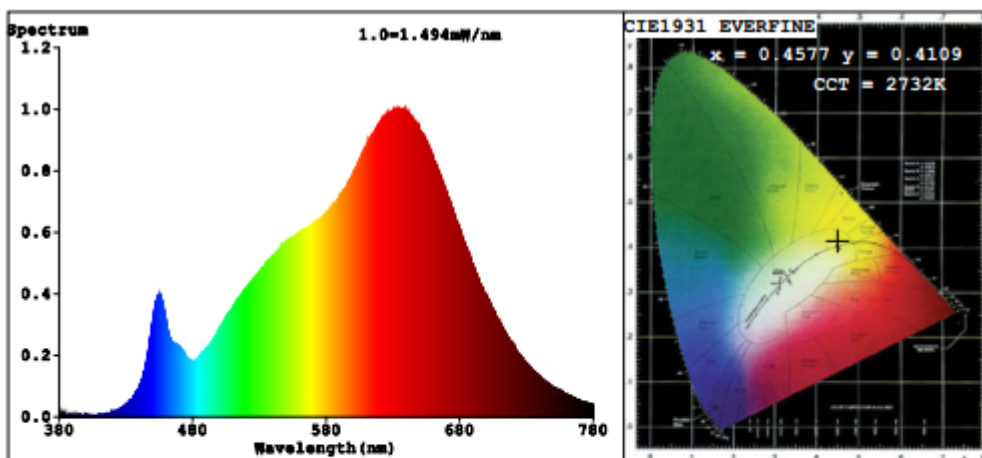
Gamma\C	CIE u'	CIE v'	du'v'	CIE u'	CIE v'	du'v'
-18	0.2636	0.5294	0.0037	0.2643	0.5288	0.0038
-17	0.2635	0.5293	0.0035	0.2641	0.5286	0.0035
-16	0.2636	0.5291	0.0035	0.2641	0.5284	0.0034
-15	0.2634	0.5288	0.0031	0.2637	0.5281	0.0029
-14	0.2634	0.5284	0.0028	0.2636	0.528	0.0028
-13	0.2632	0.5283	0.0026	0.2635	0.5278	0.0026
-12	0.263	0.5279	0.0022	0.263	0.5275	0.002
-11	0.2628	0.5275	0.0018	0.2629	0.5274	0.0019
-10	0.2629	0.5277	0.002	0.2627	0.5272	0.0016
-9	0.2628	0.5276	0.0019	0.2623	0.5269	0.0011
-8	0.2628	0.5275	0.0018	0.2622	0.5268	0.001
-7	0.2625	0.5273	0.0015	0.2619	0.5266	0.0007
-6	0.2622	0.5272	0.0012	0.2618	0.5264	0.0006
-5	0.2622	0.527	0.0011	0.2615	0.5262	0.0005
-4	0.262	0.5269	0.0009	0.2614	0.5261	0.0005
-3	0.2617	0.5267	0.0005	0.2612	0.526	0.0006
-2	0.2618	0.5266	0.0006	0.2611	0.5259	0.0007
-1	0.2617	0.5265	0.0005	0.2612	0.5259	0.0007
0	0.2612	0.5266	0	0.2612	0.5266	0
1	0.2614	0.5263	0.0004	0.2611	0.5259	0.0007
2	0.2613	0.5263	0.0003	0.2613	0.526	0.0006
3	0.2613	0.5262	0.0004	0.2611	0.5259	0.0007
4	0.2614	0.5263	0.0004	0.2607	0.5256	0.0011
5	0.2617	0.5264	0.0005	0.2603	0.5253	0.0016
6	0.2616	0.5263	0.0005	0.2599	0.5251	0.002
7	0.2612	0.526	0.0006	0.2597	0.5251	0.0021
8	0.2607	0.5258	0.0009	0.2598	0.5252	0.002
9	0.2604	0.5257	0.0012	0.26	0.5254	0.0017
10	0.2602	0.5255	0.0015	0.2603	0.5257	0.0013



11	0.26	0.5254	0.0017	0.2603	0.5256	0.0013
12	0.2601	0.5256	0.0015	0.2601	0.5255	0.0016
13	0.26	0.5255	0.0016	0.2601	0.5255	0.0016
14	0.26	0.5255	0.0016	0.2602	0.5256	0.0014
15	0.26	0.5256	0.0016	0.2602	0.5257	0.0013
16	0.2599	0.5256	0.0016	0.2603	0.5257	0.0013
17	0.2598	0.5254	0.0018	0.2605	0.5259	0.001
18	0.2597	0.5254	0.0019	0.2607	0.5259	0.0009

2.5 Electrical and Photometric Measurements, with dimming	IES LM-79 2008 ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.1
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Test date	2019-03-18	Test Ambient:	25.1 °C
Dimmer Technology		Forward phase-cut	
Sample No.		Maximum Level	Minimum Level
JCE181204-A1	Input:	Light outout(Lumen)	701.8
	120.0 V / 60 Hz	Percentage	89.5%
			64.87
			8.28%



Color Parameters:

Chromaticity Coordinate: $x=0.4577$ $y=0.4109$ $u'=0.2610$ $v'=0.5271$
 CCT=2732K (Duv=0.0003) Dominant WL:Ld =584.0nm Purity=60.7%
 Ratio:R=26.7% G=70.8% B=2.5% Peak WL:Lp=634.9nm FWHM=153.1nm
 Render Index:Ra=96.9 AvgR=95.0 TM30:Rf=0 Rg=0
 R1 =98 R2 =98 R3 =95 R4 =98 R5 =97 R6 =97 R7 =97
 R8 =94 R9 =84 R10=94 R11=98 R12=83 R13=98 R14=96 R15=96

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

Dimmer	Peak Noise Reading (dBA)	Test Condition	Distance between the microphone and the UUT
LEVITON MFG CO INC (E31373), Cat. No. 6681	19.9	Dimmer adjusted to lowest light output	< 1 m



2.6 Flicker	NEMA 77-2017 ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.1
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Dimming Technology	phase-cut
Dimmer	LEVITON MFG CO INC (E31373), Cat. No. 6681

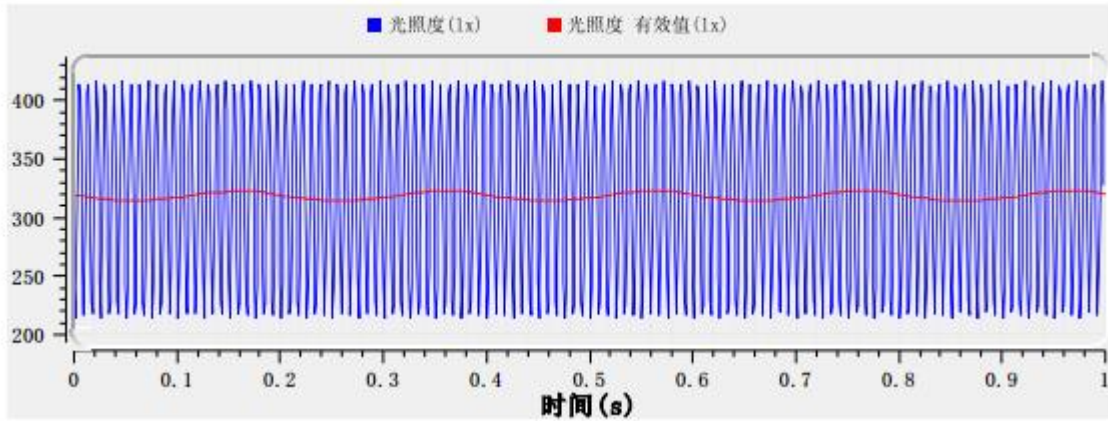
Item	Short Term Flicker Indicator (Pst)	Stroboscopic Visibility Measure (SVM)
Full light output	0.043	1.142
Maximum Level (100%)	2.177	1.591
Minimum Level (20%)	8.124	1.030



2.7 Operating Frequency	ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.1
Noted: This test and data are not covered by A2LA accreditation	

Test date	2019-03-18	Test Ambient:	25.1 °C
Sample No.	Operating Frequency (Hz)		
JCE181204-A1	120.00		

全局波形 (0-1.000s)



2.8 Starting Time <i>(Refer to Work Instruction QD28)</i>	ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.1
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Test date	2019-03-18	Test Ambient:	25.1 °C
Sample No.	Start Time (ms)		
JCE181204-A1	74.0		

Graph (Start Time):





2.9 Transient Protection Test <i>(Refer to Work Instruction QD34)</i>	ANSI/IEEE C62.41 ENERGY STAR® Program Requirements for Luminaires – Version 2.1
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Test voltage: 120V,60Hz

Test date	2019-03-18	Test Ambient	25.1 °C
Sample No.		Transient Protection Test - Seven Strikes	
JCE181204-A1		Survival	

2.10 In-Situ Temperature Measurement Test (ISTMT)	UL1598-2008, 3rd Edition
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Test date	2019-03-18	Test Ambient	25.1 °C
Input Vol./Frequency	120 V / 60 Hz	Output Current of Single LED(mA)	217
Sample No.	LED Package Model	Maximum Measured LED Ts Point Temperature (°C)	Maximum permitted Ts temperature for L70 ≥ 50,000 hrs (°C)
JCE181204-A1	CXM-9	90.8	105

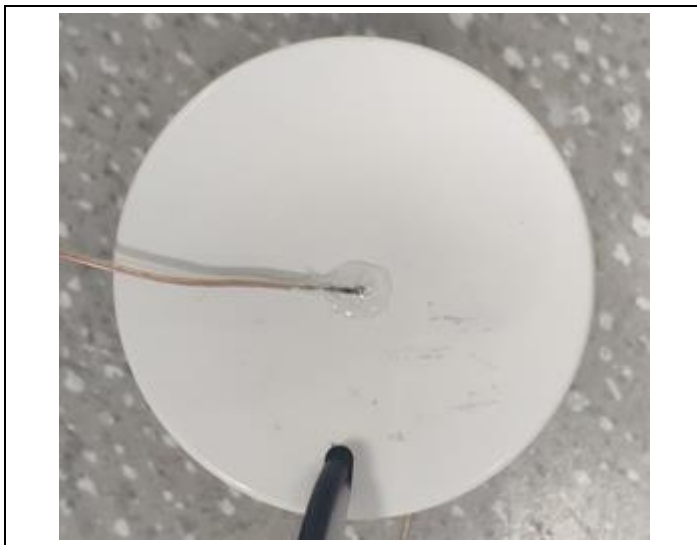
In-Situ Picture - Ts:



2.11 Maximum Measured Ballast or Driver Case Temperature	UL1598-2008, 3rd Edition
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Test date	2019-03-18	Test Ambient	25.1 °C
Sample No.	Maximum Measured Driver Case Temperature (°C)	Maximum Driver Case Temperature Limited (°C)	
JCE181204-A1	57.9	105	

In-Situ Picture - Ts:





2.11 Off-State Power Consumption:	ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.1
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Test date	2019-03-18	Test Ambient:	25.0 °C
Model Number	LMPT420	Stabilization Time (min)	90

Electrical Measurement – when the luminaires turned off:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)
JCE181204-A1	120.0	60	0	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-2000	Verified by D204 standard lamp	
ST-R-705	D204 Standard Lamp	2019-02-07	2020-02-06
ST-R-704	Power Meter for Integrating Sphere	2019-01-06	2020-01-05
ST-R-714	Goniophotometer system	Verified by D908S standard lamp	
ST-R-710	D908S Standard Lamp	2019-02-12	2020-02-11
ST-R-711	Power Meter for Goniophotometer	2019-01-06	2020-01-05
ST-R-720	Digital Luxmeter	2019-01-06	2020-01-05
ST-R-622	Oscillograph	2019-01-06	2020-01-05
ST-R-721	EMS61000-12C	2019-01-06	2020-01-05
ST-R-725	LFA-3000	2019-01-06	2020-01-05
Uncertainty Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

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