



ShenZhen Xin An Biao Technology Service Co. Ltd Testing Center

Floor 3, Building 3, No. 17, Yigongliu road, Loucun community building, Xinhua Street, Guangming New district, Shenzhen 518107

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## Energy Star Test Report

For

# L-TECH CORPORATION

(Brand Name: N/A)

Shaogangtou District, Qiaotou Town, Dongguan City

**Model name(s):**

**LRKT543/544EN-5CCT**

**Report Type:** Testing and Report According to ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2

**Type of Luminaire:** Downlight retrofits

**Report Date:** 2021-06-07

Test & Report By:

*Garman Mo*

Engineer: Garman Mo

Review By:

*Johnson Sun*

Manager: Johnson Sun

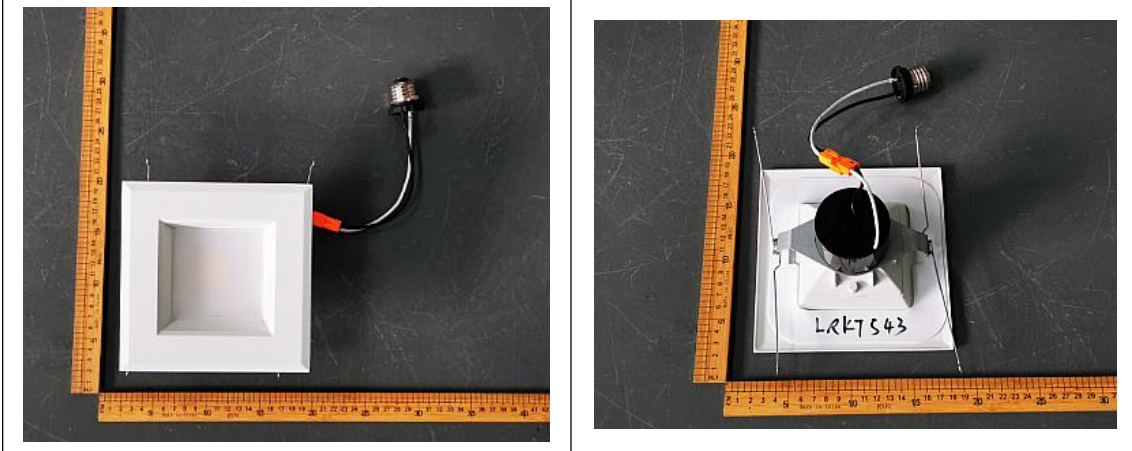
- Note: 1. The results contained in this report pertain only to the tested samples.  
2. This report does not imply product certification, approval, or endorsement by A2LA or any agency of the Federal Government.  
3. This report contains data that are not covered by the A2LA accreditation.



<b>1.1 Product Information:</b>		
Model Number	LRKT543/544EN-5CCT	
Remark	N/A	
Representative (Tested) Model	LRKT543/544EN-5CCT(2700K) LRKT543/544EN-5CCT(3000K) LRKT543/544EN-5CCT(3500K) LRKT543/544EN-5CCT(4000K) LRKT543/544EN-5CCT(5000K)	
Model Difference	N/A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Downlight retrofits	
LED Manufacturer	EVERLIGHT ELECTRONICS CO., LTD	
LED Model	67-21S Series	
Dimming	10%-100%	
Sample Number	JCE210313-DL-D1	
Date of Receipt	Apr.05,2021	
Luminaire Aperture (for Downlight retrofits)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s
Recessed Can Model	H400/H400R	
Recessed Can UL File/Cert. No.	E252582	
Recessed Can Diameter, mm	4"	
Recessed Can Height, mm	5"	

<b>1.2 Rated Values:</b>	
Rated Voltage / Frequency	120Vac, 50/60Hz
Nominal Power	16W
Rated Initial Lamp Lumen	--
Declared CCT	2700K,3000K,3500K,4000K,5000K

### 1.3 Product Photos





**1.4 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> <li>8. Color Angular Uniformity</li> <li>9. Dimming</li> <li>10. Flicker</li> <li>11. Operating Frequency</li> <li>12. Starting Time</li> <li>13. Transient Protection Test</li> <li>14. In-Situ Temperature Measurement Test</li> <li>15. Standby Power Consumption</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. C82.77-10:2014 American National Standard for Lighting Equipment-Harmonic Emission Limits-Related Power Quality Requirements</li> <li>4. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</li> <li>5. CIE 15-2004 Technical Report Colorimetry</li> <li>6. UL1993 4<sup>th</sup> Edition, Self-Ballasted Lamps and Lamp Adapters</li> <li>7. ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) – Version 2.2</li> <li>8. ANSI/IEEE C62.41.2:2002 IEEE Recommended Practice on Characterization of Surges in Low-Voltage(1000V and Less) AC Power Circuits</li> <li>9. IEC 62301:2011 Household electrical appliances - Measurement of standby power</li> <li>10. NEMA 77-2017 Standard for Temporal Light Artifacts: Test Methods and Guidance for Acceptance Criteria</li> </ol>
Remark	<p>Below test and data are not covered by A2LA accreditation:</p> <ul style="list-style-type: none"> <li>- Operating Frequency</li> <li>- Noise</li> </ul>



## 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  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , 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 Summary of Test Result

Criteria Item	The Type of Luminaires	Requirement (ES for Luminaires V2.2)	Measured Value	Status
Input Wattage	All	≤ Rated Wattage	13.82W	Pass
Luminous Efficacy	Downlight retrofits	≥60 lm/W	79.50lm/W	Pass
Luminaire Minimum Light Output	Downlight retrofits	≤ 4.5" aperture: 345 lumens > 4.5" aperture: 575 lumens	1098.7lm	Pass
Correlated Color Temperature (CCT)	Downlight retrofits	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	2708K Duv=-0.0010	Pass
Color Rendering Index (CRI)	Downlight retrofits	Ra ≥ 80 R9 >0	Ra =90.3 R9 =55	Pass
Luminaire Zonal Lumen Density	Downlight retrofits	Luminaire shall deliver a minimum of 75% of total lumens within the 0-60° zone (axially symmetric about the nadir)	87.6	Pass
Color Angular Uniformity	Downlight retrofits	Throughout the beam angle, the variation of chromaticity shall be within a total linear distance of 0.006 from the weighted average point on the CIE 1976 (u',v') diagram.	0.0008	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		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	<table border="1"> <tr> <td>50,000</td> </tr> <tr> <td>73.13%</td> </tr> <tr> <td>&gt;54000</td> </tr> </table>	50,000	73.13%	>54000	Pass
50,000							
73.13%							
>54000							
Color Maintenance	Downlight retrofits	$\Delta u'v' \leq 0.007$	Max.0.00665 in LM-80 report*	Pass			
Source Start Time	Downlight retrofits	<750 ms	92.0ms	Pass			
Power Factor	Solid State	Total luminaire input power ≤ 5 watts: PF ≥ 0.5 Total luminaire input power > 5 watts: PF ≥ 0.7	0.976	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 Measured Driver Case Temperature	Solid State	shall not exceed the driver manufacturer's maximum recommended temperature during in situ operation. ≤ 105 °C	95.4°C	Pass			
Maximum In-Situ Source Temperature	Solid State	Maximum permitted Ts temperature for L70≥50,000 hrs ≤ 105°C	83.1°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	Validated	Pass			



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		noise above 24dBA at 1 meter or less at the minimum output.		
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 "\*".





<b>2.2.1 Electrical, Photometric and Chromaticity Measurements</b>	<b>IES LM-79 2008</b>
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<b>Test date</b>	2021-04-07	<b>Test Ambient:</b>	25 ± 1° C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	60
<b>Model Number</b>	LRKT543/544EN-5CCT(2700K)	<b>Total Operating Time (min)</b>	75

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
JCE210313-DL-D1	120.0	60	0.118	13.82	0.976

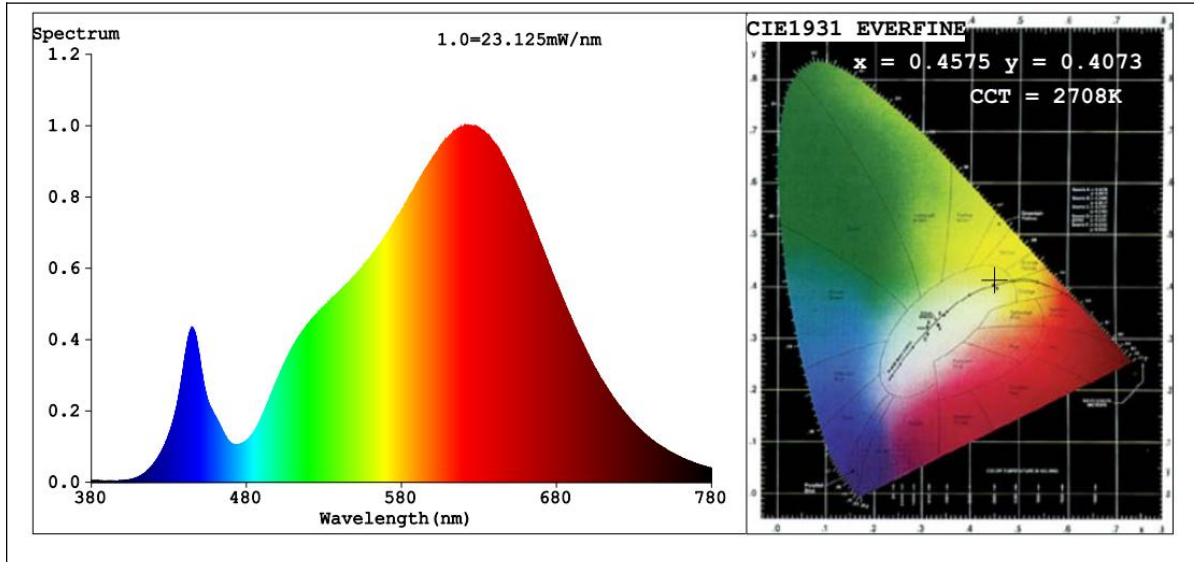
**Sphere-Spectroradiometer Method(Self-absorption:1.0548):**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	90.3
R9	55
CCT (K)	2708
Duv	-0.0010

**Goniophotometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1098.7
Luminous Efficacy (lm/W)	79.50
Beam Angle°	96.7
Center Beam Candle Power (cd)	484

### Spectral Power Distribution and Chromaticity Diagram



### Colorimetric Parameters

#### Color Parameters:

Chromaticity Coordinate:  $x=0.4575$   $y=0.4073$   $u'=0.2624$   $v'=0.5257$

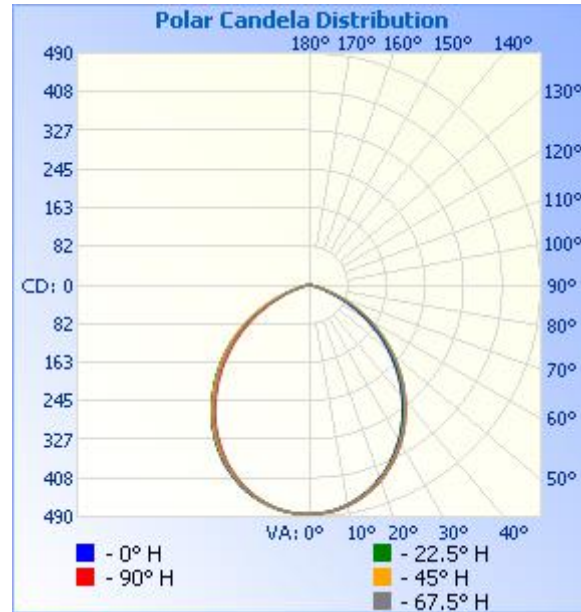
CCT=2708K (Duv=-0.0010) Dominant WL:Ld = 584.5nm WL:Lc = --nm Purity=59.6%

Ratio: R=26.1% G=72.0% B=2.0% Peak WL:Lp=621.0nm FWHM=153.2nm

Render Index: Ra=90.3 AvgR=87.3 TM30:Rf=87 Rg=103

R1 =91	R2 =93	R3 =95	R4 =91	R5 =90	R6 =92	R7 =91
R8 =80	R9 =55	R10=84	R11=92	R12=82	R13=91	R14=96 R15=87

## Zonal Lumen Tabulation



Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	365.3	33.3%
0-40	584.3	53.2%
0-60	961.8	87.6%
60-90	133.3	12.1%
70-100	36.5	3.3%
90-120	1.5	0.1%
0-90	1,095.1	99.7%
90-180	3.4	0.3%
0-180	1,098.5	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	45.7	4.2%	90-100	0.5	0%
10-20	129.1	11.8%	100-110	0.5	0%
20-30	190.5	17.3%	110-120	0.5	0%
30-40	218.9	19.9%	120-130	0.5	0%
40-50	210.3	19.1%	130-140	0.5	0%
50-60	167.3	15.2%	140-150	0.4	0%
60-70	97.3	8.9%	150-160	0.3	0%
70-80	30.5	2.8%	160-170	0.2	0%
80-90	5.5	0.5%	170-180	0.1	0%



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98	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1
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100	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1
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104	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	1	1
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106	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1
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108	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1
109	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1
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112	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1
113	1	1	1	1	1	0	0	0	1	0	0	0	0	1	1	1	1
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120	1	1	1	1	1	0	0	0	0	1	0	0	0	1	1	1	1
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123	1	1	1	1	1	0	1	0	0	0	0	0	0	1	1	1	1
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126	1	1	1	1	1	0	0	0	1	0	1	0	1	1	1	1	1



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127	1	1	1	1	1	1	0	1	0	1	0	1	1	1	1	1
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158	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1





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159	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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179	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
180	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1



<b>2.2.2 Electrical, Photometric and Chromaticity Measurements</b>	<b>IES LM-79 2008</b>
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<b>Test date</b>	2021-04-07	<b>Test Ambient:</b>	25 ± 1° C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	60
<b>Model Number</b>	LRKT543/544EN-5CCT(3000K)	<b>Total Operating Time (min)</b>	61

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
JCE210313-DL-D1	120.0	60	0.121	13.86	0.958

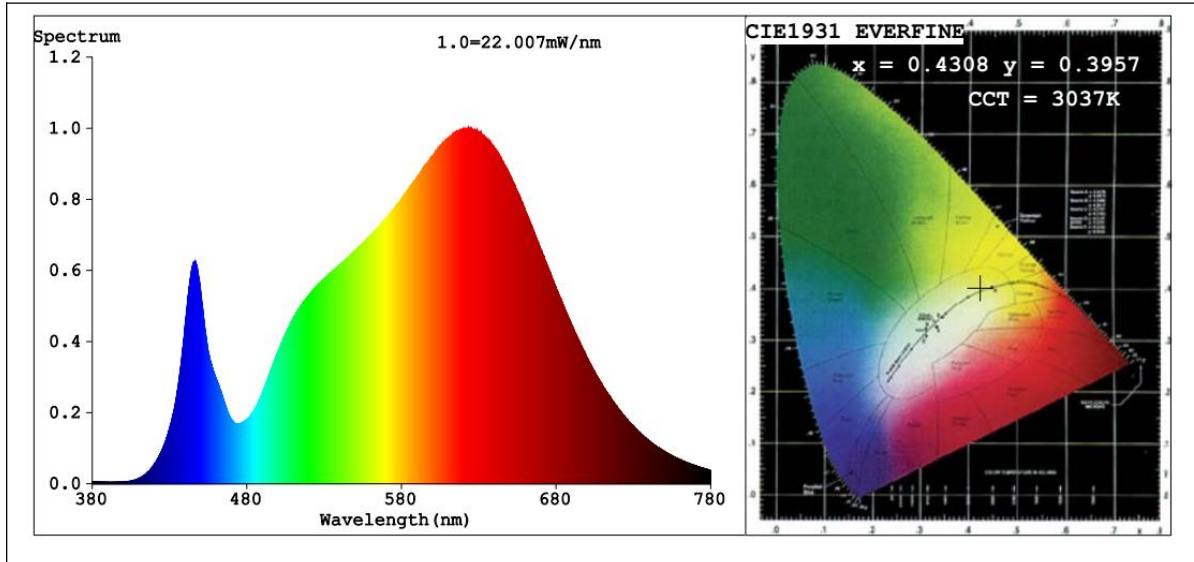
**Sphere-Spectroradiometer Method(Self-absorption:1.0548):**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	92.0
R9	64
CCT (K)	3037
Duv	-0.0025

**Sphere-Spectroradiometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1134
Luminous Efficacy (lm/W)	81.82

### Spectral Power Distribution and Chromaticity Diagram



### Colorimetric Parameters

#### Color Parameters:

Chromaticity Coordinate:  $x=0.4308$   $y=0.3957$   $u'=0.2502$   $v'=0.5171$

CCT=3037K (Duv=-0.0025) Dominant WL:Ld =583.6nm WL:Lc = --nm Purity=48.1%

Ratio:R=24.1% G=73.3% B=2.6% Peak WL:Lp=623.6nm FWHM=169.7nm

Render Index:Ra=92.0 AvgR=89.5 TM30:Rf=89 Rg=103

R1 =93	R2 =94	R3 =94	R4 =92	R5 =93	R6 =93	R7 =92
R8 =84	R9 =64	R10=86	R11=93	R12=83	R13=93	R14=96
						R15=90



<b>2.2.3 Electrical, Photometric and Chromaticity Measurements</b>	<b>IES LM-79 2008</b>
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<b>Test date</b>	2021-04-07	<b>Test Ambient:</b>	25 ± 1° C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	60
<b>Model Number</b>	LRKT543/544EN-5CCT(3500K)	<b>Total Operating Time (min)</b>	61

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
JCE210313-DL-D1	120.0	60	0.119	13.84	0.966

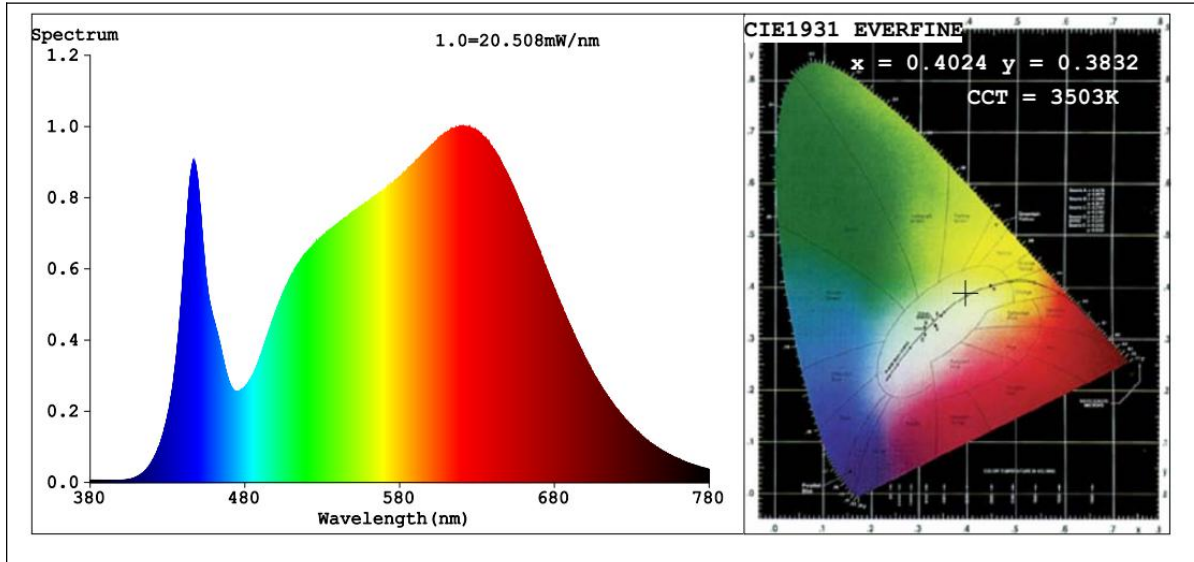
**Sphere-Spectroradiometer Method(Self-absorption:1.0548):**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	93.0
R9	71
CCT (K)	3503
Duv	-0.0027

**Sphere-Spectroradiometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1173
Luminous Efficacy (lm/W)	84.75

### Spectral Power Distribution and Chromaticity Diagram



### Colorimetric Parameters

#### Color Parameters:

Chromaticity Coordinate:  $x=0.4024$   $y=0.3832$   $u'=0.2369$   $v'=0.5077$

CCT=3503K (Duv=-0.0027) Dominant WL:Ld =582.1nm WL:Lc = --nm Purity=35.8%

Ratio:R=21.8% G=74.9% B=3.3% Peak WL:Lp=621.0nm FWHM=182.3nm

Render Index:Ra=93.0 AvgR=90.6 TM30:Rf=91 Rg=103

R1 =94	R2 =95	R3 =94	R4 =93	R5 =94	R6 =92	R7 =93
R8 =88	R9 =71	R10=87	R11=94	R12=81	R13=94	R14=96 R15=93



<b>2.2.4 Electrical, Photometric and Chromaticity Measurements</b>	<b>IES LM-79 2008</b>
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<b>Test date</b>	2021-04-07	<b>Test Ambient:</b>	25 ± 1° C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	60
<b>Model Number</b>	LRKT543/544EN-5CCT(4000K)	<b>Total Operating Time (min)</b>	61

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
JCE210313-DL-D1	120.0	60	0.119	13.83	0.966

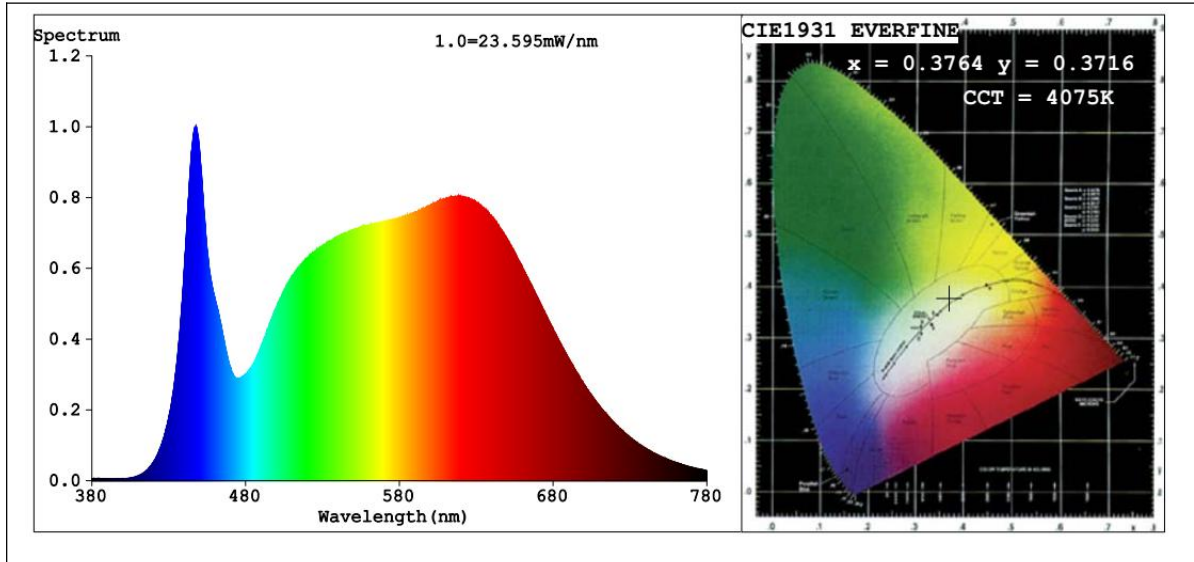
**Sphere-Spectroradiometer Method(Self-absorption:1.0548):**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	93.1
R9	73
CCT (K)	4075
Duv	-0.0012

**Sphere-Spectroradiometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1208
Luminous Efficacy (lm/W)	87.35

### Spectral Power Distribution and Chromaticity Diagram



### Colorimetric Parameters

#### Color Parameters:

Chromaticity Coordinate:  $x=0.3764$   $y=0.3716$   $u'=0.2245$   $v'=0.4987$

CCT=4075K (Duv=-0.0012) Dominant WL:Ld =579.5nm WL:Lc = --nm Purity=24.5%

Ratio:R=19.6% G=76.4% B=4.0% Peak WL:Lp=447.8nm FWHM=22.4nm

Render Index:Ra=93.1 AvgR=90.3 TM30:Rf=92 Rg=102

R1 =94	R2 =94	R3 =93	R4 =94	R5 =93	R6 =91	R7 =95
R8 =90	R9 =73	R10=85	R11=94	R12=76	R13=94	R14=96 R15=93



<b>2.2.5 Electrical, Photometric and Chromaticity Measurements</b>	<b>IES LM-79 2008</b>
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<b>Test date</b>	2021-04-07	<b>Test Ambient:</b>	25 ± 1° C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	60
<b>Model Number</b>	LRKT543/544EN-5CCT(5000K)	<b>Total Operating Time (min)</b>	61

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
JCE210313-DL-D1	120.0	60	0.119	13.77	0.967

**Sphere-Spectroradiometer Method(Self-absorption:1.0548):**

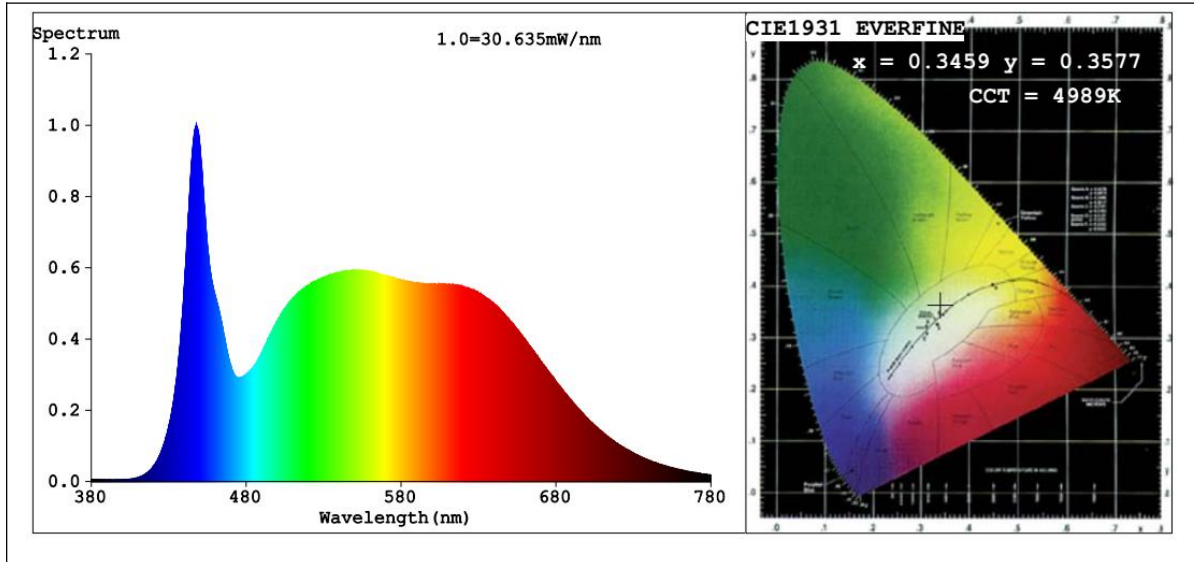
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	91.4
R9	66
CCT (K)	4989
Duv	0.0027

**Sphere-Spectroradiometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1248
Luminous Efficacy (lm/W)	90.63



### Spectral Power Distribution and Chromaticity Diagram



### Colorimetric Parameters

#### Color Parameters:

Chromaticity Coordinate:  $x=0.3459$   $y=0.3577$   $u'=0.2096$   $v'=0.4877$

CCT=4989K (Duv=0.0027) Dominant WL:Ld =570.4nm WL:Lc = --nm Purity=11.1%

Ratio:R=16.9% G=78.2% B=4.9% Peak WL:Lp=447.8nm FWHM=22.0nm

Render Index:Ra=91.4 AvgR=87.6 TM30:Rf=91 Rg=100

R1 =91	R2 =92	R3 =92	R4 =92	R5 =90	R6 =88	R7 =95
R8 =88	R9 =66	R10=81	R11=91	R12=68	R13=91	R14=96 R15=90



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<b>2.3 Color Spatial Uniformity</b>	<b>IES LM-79 2008</b> <b>ENERGY STAR® Program Requirements</b> <b>Product Specification for Luminaires (Light Fixtures) - Version 2.2</b>
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**Test Data:**

<b>Test date</b>	2021-04-07	<b>Test Ambient</b>	25.1°C
<b>Sample No.</b>	<b>Maximum Δu'v'</b>		
JCE210313-DL-D1	0.0008		



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C0				C90			
gamma	Au'	Av'	Au'v'	gamma	Au'	Av'	Au'v'
0	0.00001	-0.00015	0.00015	0	0.00008	-0.00013	0.00015
1	0.00008	-0.00013	0.00015	1	0.00008	-0.00013	0.00015
2	0.00008	-0.00013	0.00015	2	0.00008	-0.00013	0.00015
3	0.00012	-0.00017	0.00021	3	0.00012	-0.00017	0.00021
4	0.00008	-0.00013	0.00015	4	0.00008	-0.00013	0.00015
5	0.00008	-0.00013	0.00015	5	0.00008	-0.00013	0.00015
6	0.00012	-0.00017	0.00021	6	0.00008	-0.00013	0.00015
7	0.00014	-0.00012	0.00018	7	0.00008	-0.00013	0.00015
8	0.00012	-0.00017	0.00021	8	0.00014	-0.00012	0.00018
9	0.00019	-0.00016	0.00024	9	0.00008	-0.00013	0.00015
10	0.00019	-0.00016	0.00024	10	0.00014	-0.00012	0.00018
11	0.00019	-0.00016	0.00024	11	0.00014	-0.00012	0.00018
12	0.00019	-0.00016	0.00024	12	0.00016	-0.00006	0.00017
13	0.00019	-0.00016	0.00024	13	0.00016	-0.00006	0.00017
14	0.00021	-0.00010	0.00023	14	0.00016	-0.00006	0.00017
15	0.00021	-0.00010	0.00023	15	0.00027	-0.00009	0.00029
16	0.00025	-0.00014	0.00029	16	0.00023	-0.00005	0.00023
17	0.00021	-0.00010	0.00023	17	0.00023	-0.00005	0.00023
18	0.00021	-0.00010	0.00023	18	0.00023	-0.00005	0.00023
19	0.00021	-0.00010	0.00023	19	0.00029	-0.00003	0.00029
20	0.00021	-0.00010	0.00023	20	0.00025	0.00001	0.00025
21	0.00021	-0.00010	0.00023	21	0.00025	0.00001	0.00025
22	0.00027	-0.00009	0.00029	22	0.00025	0.00001	0.00025
23	0.00021	-0.00010	0.00023	23	0.00031	0.00002	0.00031
24	0.00023	-0.00005	0.00023	24	0.00031	0.00002	0.00031
25	0.00023	-0.00005	0.00023	25	0.00031	0.00002	0.00031
26	0.00027	-0.00009	0.00029	26	0.00038	0.00004	0.00038
27	0.00027	-0.00009	0.00029	27	0.00038	0.00004	0.00038
28	0.00027	-0.00009	0.00029	28	0.00038	0.00004	0.00038
29	0.00023	-0.00005	0.00023	29	0.00038	0.00004	0.00038
30	0.00023	-0.00005	0.00023	30	0.00038	0.00004	0.00038
31	0.00023	-0.00005	0.00023	31	0.00033	0.00007	0.00034
32	0.00023	-0.00005	0.00023	32	0.00038	0.00004	0.00038
33	0.00023	-0.00005	0.00023	33	0.00033	0.00007	0.00034
34	0.00023	-0.00005	0.00023	34	0.00027	0.00006	0.00027
35	0.00016	-0.00006	0.00017	35	0.00027	0.00006	0.00027
36	0.00016	-0.00006	0.00017	36	0.00027	0.00006	0.00027
37	0.00016	-0.00006	0.00017	37	0.00027	0.00006	0.00027
38	0.00016	-0.00006	0.00017	38	0.00020	0.00004	0.00021
39	0.00016	-0.00006	0.00017	39	0.00025	0.00001	0.00025
40	0.00010	-0.00008	0.00012	40	0.00025	0.00001	0.00025
41	0.00008	-0.00013	0.00015	41	0.00018	-0.00001	0.00018
42	0.00008	-0.00013	0.00015	42	0.00012	-0.00002	0.00012
43	0.00001	-0.00015	0.00015	43	0.00016	-0.00006	0.00017
44	-0.00005	-0.00016	0.00017	44	0.00010	-0.00008	0.00012
45	-0.00007	-0.00022	0.00023	45	-0.00001	-0.00006	0.00006
46	-0.00016	-0.00029	0.00033	46	0.00003	-0.00009	0.00010
47	-0.00027	-0.00026	0.00037	47	-0.00005	-0.00016	0.00017
48	-0.00029	-0.00032	0.00043	48	-0.00012	-0.00018	0.00021
49	-0.00035	-0.00033	0.00048	49	-0.00018	-0.00019	0.00027



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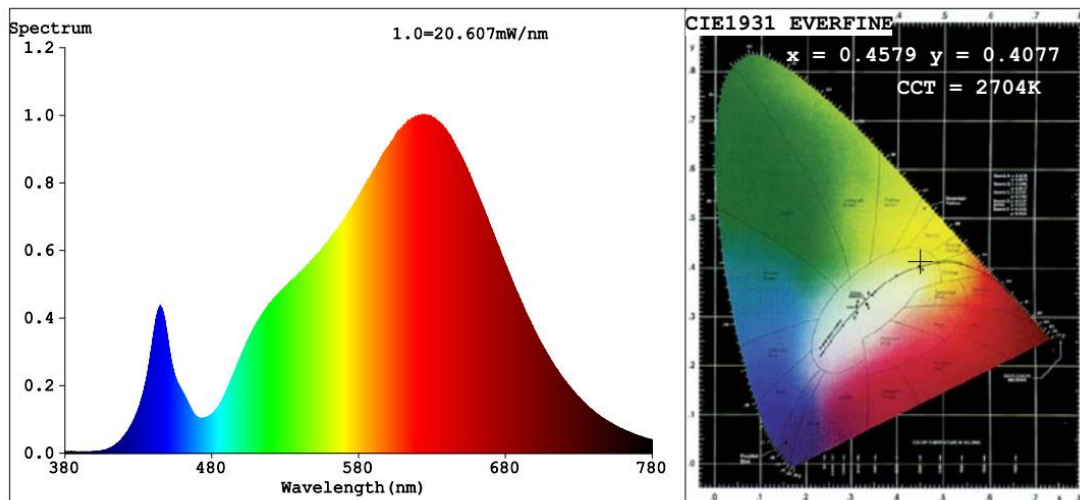
Fax: (+86)755-2319 2815

Certificate #4703.03

C180				C270			
gamma	Au'	Δv'	Au'v'	gamma	Au'	Δv'	Au'v'
0	0.00001	-0.00015	0.00015	0	0.00008	-0.00013	0.00015
1	0.00008	-0.00013	0.00015	1	0.00008	-0.00013	0.00015
2	0.00008	-0.00013	0.00015	2	0.00008	-0.00013	0.00015
3	0.00003	-0.00009	0.00010	3	0.00008	-0.00013	0.00015
4	0.00003	-0.00009	0.00010	4	0.00003	-0.00009	0.00010
5	0.00003	-0.00009	0.00010	5	0.00003	-0.00009	0.00010
6	0.00003	-0.00009	0.00010	6	0.00003	-0.00009	0.00010
7	0.00003	-0.00009	0.00010	7	0.00003	-0.00009	0.00010
8	0.00003	-0.00009	0.00010	8	0.00003	-0.00009	0.00010
9	-0.00001	-0.00006	0.00006	9	0.00010	-0.00008	0.00012
10	-0.00001	-0.00006	0.00006	10	0.00003	-0.00009	0.00010
11	0.00005	-0.00004	0.00007	11	-0.00001	-0.00006	0.00006
12	0.00005	-0.00004	0.00007	12	0.00003	-0.00009	0.00010
13	0.00001	0.00000	0.00001	13	-0.00001	-0.00006	0.00006
14	0.00001	0.00000	0.00001	14	-0.00001	-0.00006	0.00006
15	0.00001	0.00000	0.00001	15	-0.00006	-0.00002	0.00006
16	0.00003	0.00005	0.00006	16	0.00001	0.00000	0.00001
17	0.00003	0.00005	0.00006	17	-0.00006	-0.00002	0.00006
18	-0.00002	0.00009	0.00009	18	0.00001	0.00000	0.00001
19	-0.00002	0.00009	0.00009	19	0.00001	0.00000	0.00001
20	-0.00002	0.00009	0.00009	20	-0.00004	0.00004	0.00005
21	-0.00006	0.00013	0.00015	21	-0.00004	0.00004	0.00005
22	-0.00006	0.00013	0.00015	22	-0.00004	0.00004	0.00005
23	-0.00006	0.00013	0.00015	23	-0.00004	0.00004	0.00005
24	-0.00006	0.00013	0.00015	24	-0.00004	0.00004	0.00005
25	-0.00005	0.00018	0.00019	25	-0.00004	0.00004	0.00005
26	-0.00005	0.00018	0.00019	26	-0.00008	0.00008	0.00011
27	-0.00005	0.00018	0.00019	27	-0.00008	0.00008	0.00011
28	-0.00009	0.00022	0.00024	28	-0.00008	0.00008	0.00011
29	-0.00009	0.00022	0.00024	29	-0.00015	0.00006	0.00016
30	-0.00009	0.00022	0.00024	30	-0.00015	0.00006	0.00016
31	-0.00009	0.00022	0.00024	31	-0.00015	0.00006	0.00016
32	-0.00014	0.00026	0.00029	32	-0.00008	0.00008	0.00011
33	-0.00016	0.00021	0.00026	33	-0.00015	0.00006	0.00016
34	-0.00016	0.00021	0.00026	34	-0.00015	0.00006	0.00016
35	-0.00020	0.00025	0.00032	35	-0.00021	0.00005	0.00022
36	-0.00020	0.00025	0.00032	36	-0.00021	0.00005	0.00022
37	-0.00020	0.00025	0.00032	37	-0.00021	0.00005	0.00022
38	-0.00027	0.00023	0.00035	38	-0.00021	0.00005	0.00022
39	-0.00027	0.00023	0.00035	39	-0.00028	0.00003	0.00028
40	-0.00033	0.00022	0.00039	40	-0.00023	-0.00001	0.00023
41	-0.00040	0.00020	0.00044	41	-0.00030	-0.00002	0.00030
42	-0.00035	0.00016	0.00039	42	-0.00036	-0.00004	0.00037
43	-0.00041	0.00015	0.00044	43	-0.00038	-0.00009	0.00039
44	-0.00041	0.00015	0.00044	44	-0.00045	-0.00011	0.00046
45	-0.00050	0.00008	0.00051	45	-0.00051	-0.00012	0.00053
46	-0.00056	0.00006	0.00057	46	-0.00058	-0.00014	0.00059
47	-0.00063	0.00005	0.00063	47	-0.00060	-0.00019	0.00063
48	-0.00065	-0.00001	0.00065	48	-0.00073	-0.00022	0.00076
49	-0.00073	-0.00007	0.00074	49	-0.00075	-0.00027	0.00080

<b>2.4 Electrical and Photometric Measurements, with dimming</b>	<b>IES LM-79 2008 ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2</b>
<b>Noted: The noise test and data are not covered by A2LA accreditation</b>	

<b>Test date</b>	2021-04-07		<b>Test Ambient:</b>	25±1° C
<b>Dimmer Technology</b>			Forward phase-cut	
<b>Sample No.</b>		<b>Maximum Level</b>	<b>Minimum Level</b>	
JCE210313-DL-D1	Input: 120.0V / 60Hz	Light outout(Lumen)	1009	61.35
		Percentage	91.84%	6.08%



**Color Parameters:**

Chromaticity Coordinate:  $x=0.4579$   $y=0.4077$  /  $u'=0.2626$   $v'=0.5259$   
 CCT=2704K (Duv=-0.0009) Dominant WL:Ld =584.5nm WL:Lc = --nm Purity=59.8%  
 Ratio:R=26.1% G=71.9% B=1.9% Peak WL:Lp=623.6nm FWHM=153.3nm  
 Render Index:Ra=90.4 AvgR=87.4 TM30:Rf=87 Rg=103

R1 =91 R2 =93 R3 =95 R4 =91 R5 =90 R6 =92 R7 =91  
 R8 =80 R9 =55 R10=84 R11=93 R12=82 R13=91 R14=96 R15=87

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

Dimmer Technology	Peak Noise Reading (dBA)	Test Condition	Distance between the microphone and the UUT
LUTRON MACL-153M	14.1	Dimmer adjusted to lowest light output	< 1 m



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<b>2.5 Flicker</b>	<b>NEMA 77-2017 ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2</b>
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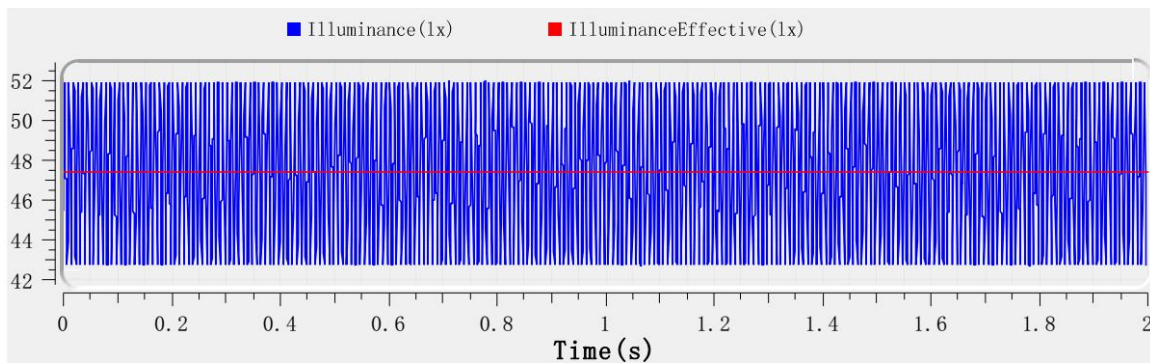
<b>Dimming Technology</b>	Forward phase-cut
<b>Dimmer</b>	LUTRON MACL-153M

Item	Short Term Flicker Indicator (Pst)	Stroboscopic Visibility Measure (SVM)
<b>Maximum conduction</b>	0.040	0.385
<b>Intermediate conduction</b>	0.147	0.569
<b>Minimum conduction</b>	0.666	0.326



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

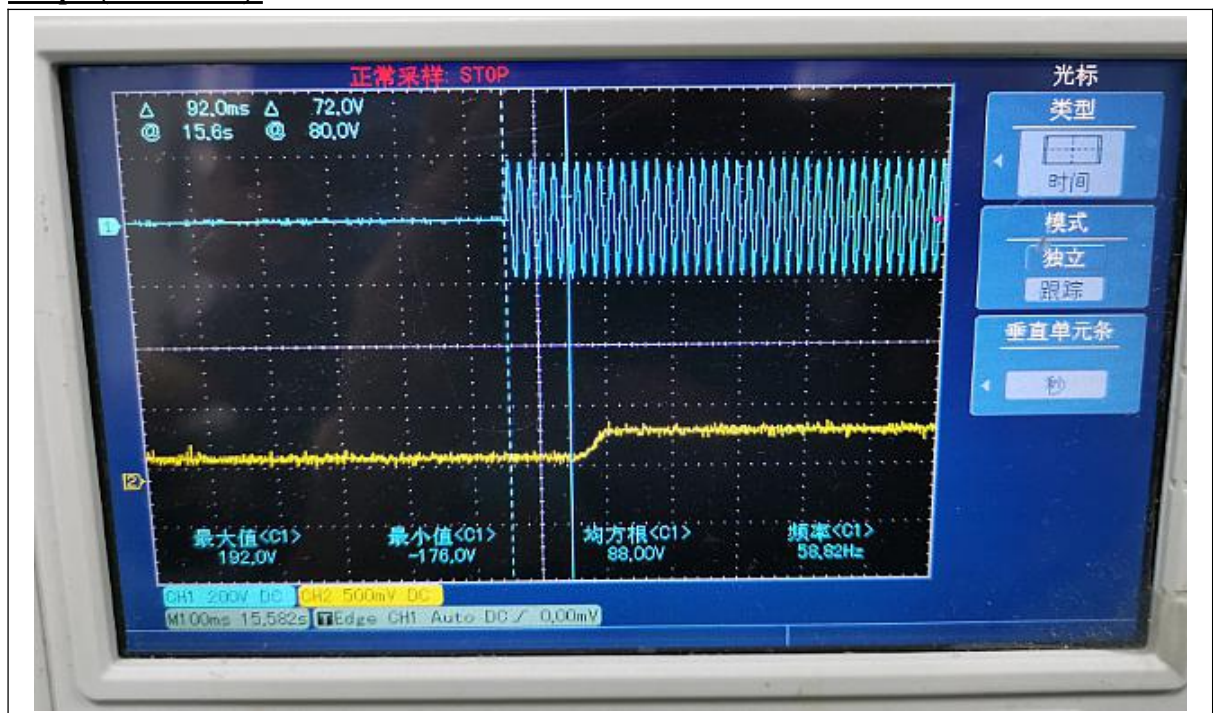
<b>Test date</b>	2021-04-07	<b>Test Ambient:</b>	25±1° C
<b>Sample No.</b>	<b>Operating Frequency (Hz)</b>		
JCE210313-DL-D1	120.000		



<b>2.7 Starting Time</b>	<b>ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2</b>
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Test date	2021-04-07	Test Ambient:	25±1° C
Sample No.	Start Time (ms)		
JCE210313-DL-D1	92.0		

**Graph (Start Time):**







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<b>2.8 Transient Protection Test</b>	<b>ANSI/IEEE C62.41 ENERGY STAR® Program Requirements for Luminaires – Version 2.2</b>
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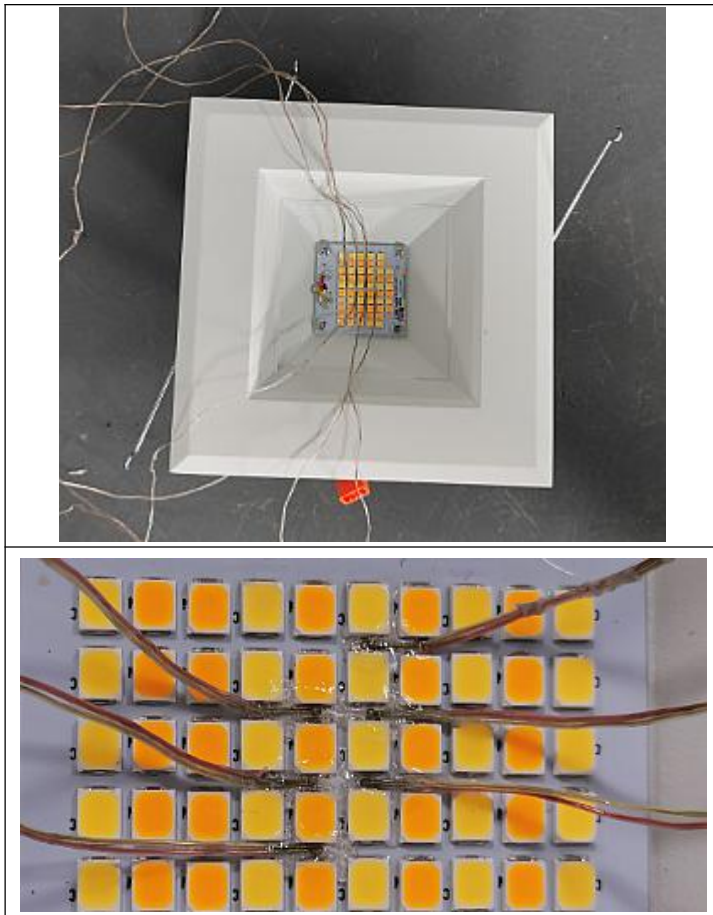
**Test voltage: 120V,60Hz**

<b>Test date</b>	2021-04-07	<b>Test Ambient</b>	25±1° C
<b>Sample No.</b>		<b>Transient Protection Test - Seven Strikes</b>	
JCE210313-DL-D1		Survival	

**2.9 In-Situ Temperature Measurement Test (ISTMT) | UL1598-2008, 3<sup>rd</sup> Edition**

Test date	2021-04-07	Test Ambient	25±5° C
Input Vol./Frequency	120.0V / 60Hz	Output Current of Single LED(mA)	144.3
Sample No.	LED Package Model	Maximum Measured LED Ts Point Temperature (°C)	Maximum permitted Ts temperature for L70 ≥ 50,000 hrs (°C)
JCE210313-DL-D1	67-21S Series	83.1	105

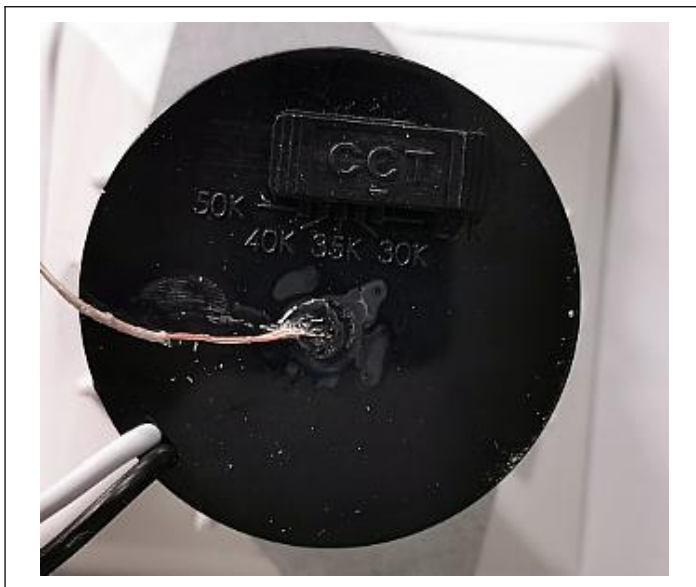
**In-Situ Picture - Ts:**



<b>2.10 Maximum Measured Ballast or Driver Case Temperature</b>	<b>UL1598-2008, 3<sup>rd</sup> Edition</b>
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<b>Test date</b>	2021-04-07	<b>Test Ambient</b>	25±5° C
<b>Sample No.</b>	<b>Maximum Measured Driver Case Temperature (°C)</b>	<b>Maximum Driver Case Temperature Limited (°C)</b>	
JCE210313-DL-D1	95.4	105	

**In-Situ Picture - Ts:**





<b>2.11 Standby Power Consumption:</b>	<b>ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2</b>
--	--

<b>Test date</b>	2021-04-07	<b>Test Ambient:</b>	25±1° C
<b>Model Number</b>	LRKT543/544EN-5CCT(2700 K)	<b>Stabilization Time (min)</b>	60

**Electrical Measurement – when the luminaires turned off:**

<b>Sample No.</b>	<b>Standby Power Consumption(W):</b>
JCE210313-DL-D1	0



### 3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-S-451	2 meter Integrating Sphere	Verified by D204 standard lamp	
ST-R-S-455	Spectral analysis system HAAS-1200	Verified by D204 standard lamp	
ST-R-S-452	Standard Lamp D204	2021-04-15	2022-04-14
ST-R-S-453	Power Meter for Integrating Sphere	2021-04-07	2022-04-06
ST-R-S-407	Goniophotometer system	Verified by S1530039 standard lamp	
ST-R-S-410	Standard Lamp S1530039	2021-04-15	2022-04-14
ST-R-S-408	Power Meter for Goniophotometer	2021-04-07	2022-04-06
ST-R-S-027	Digital Luxmeter	2021-04-08	2022-04-07
ST-R-S-016	Oscillograph	2021-04-07	2022-04-06
ST-R-S-017	Probe	2021-04-08	2022-04-07
ST-R-361	ZLB61012X	2020-08-19	2021-08-20
ST-R-414	LFA-3000	2020-12-18	2021-12-17
Uncertainty: Photometric Measurement (Sphere): 2.72%, k=2 Chromaticity Measurement(Sphere): 43.60K, k=2 Photometric Measurement(Goniophotometer): 3.44%, k=2			

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