



ShenZhen Xin An Biao Technology Service Co. Ltd Testing Center

Floor 3, Building 3, No. 17, Yigongliu road, Loucun community building, Xihu 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):

LRKT411EN-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.



1.1 Product Information:		
Model Number	LRKT411EN-5CCT	
Remark	N/A	
Representative (Tested) Model	LRKT411EN-5CCT(2700K) LRKT411EN-5CCT(3000K) LRKT411EN-5CCT(3500K) LRKT411EN-5CCT(4000K) LRKT411EN-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-L1	
Date of Receipt	Apr.12,2021	
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"	

1.2 Rated Values:	
Rated Voltage / Frequency	120Vac, 50/60Hz
Nominal Power	9W
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"> 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 8. Color Angular Uniformity 9. Dimming 10. Flicker 11. Operating Frequency 12. Starting Time 13. Transient Protection Test 14. In-Situ Temperature Measurement Test 15. Standby Power Consumption
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2015 Specifications for the Chromaticity of Solid State Lighting Products 3. C82.77-10:2014 American National Standard for Lighting Equipment-Harmonic Emission Limits-Related Power Quality Requirements 4. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 5. CIE 15-2004 Technical Report Colorimetry 6. UL1993 4th Edition, Self-Ballasted Lamps and Lamp Adapters 7. ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) – Version 2.2 8. ANSI/IEEE C62.41.2:2002 IEEE Recommended Practice on Characterization of Surges in Low-Voltage(1000V and Less) AC Power Circuits 9. IEC 62301:2011 Household electrical appliances - Measurement of standby power 10. NEMA 77-2017 Standard for Temporal Light Artifacts: Test Methods and Guidance for Acceptance Criteria
Remark	<p>Below test and data are not covered by A2LA accreditation:</p> <ul style="list-style-type: none"> - Operating Frequency - Noise



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° 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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	7.940W	Pass
Luminous Efficacy	Downlight retrofits	≥60 lm/W	81.80lm/W	Pass
Luminaire Minimum Light Output	Downlight retrofits	≤ 4.5" aperture: 345 lumens > 4.5" aperture: 575 lumens	649.52lm	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	2733K Duv=0.0002	Pass
Color Rendering Index (CRI)	Downlight retrofits	Ra ≥ 80 R9 >0	Ra =91.1 R9 =56	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)	79.2	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.	0.0010	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



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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>73.28%</td> </tr> <tr> <td>>54000</td> </tr> </table>	50,000	73.28%	>54000	Pass
50,000							
73.28%							
>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	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	0.961	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	76.4°C	Pass			
Maximum In-Situ Source Temperature	Solid State	Maximum permitted Ts temperature for L70≥50,000 hrs ≤ 105°C	82.3°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 “*”.



2.2.1 Electrical, Photometric and Chromaticity Measurements	IES LM-79 2008
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Test date	2021-04-14	Test Ambient:	25 ± 1° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	LRKT411EN-5CCT(2700 K)	Total Operating Time (min)	75

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
JCE210313-DL-L1	120.0	60	0.069	7.940	0.961

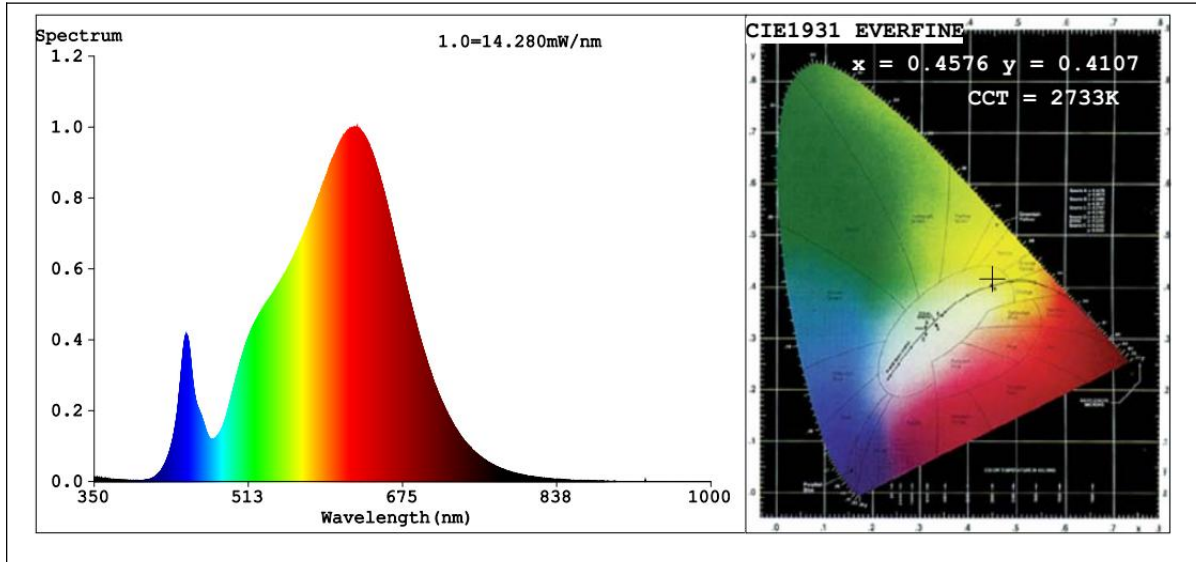
Sphere-Spectroradiometer Method(Self-absorption:1.0500):

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	91.1
R9	56
CCT (K)	2733
Duv	0.0002

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	649.52
Luminous Efficacy (lm/W)	81.80
Beam Angle°	103.2
Center Beam Candle Power (cd)	247

Spectral Power Distribution and Chromaticity Diagram



Colorimetric Parameters

Color Parameters:

Chromaticity Coordinate: $x=0.4576$ $y=0.4107$ $u'=0.2610$ $v'=0.5271$

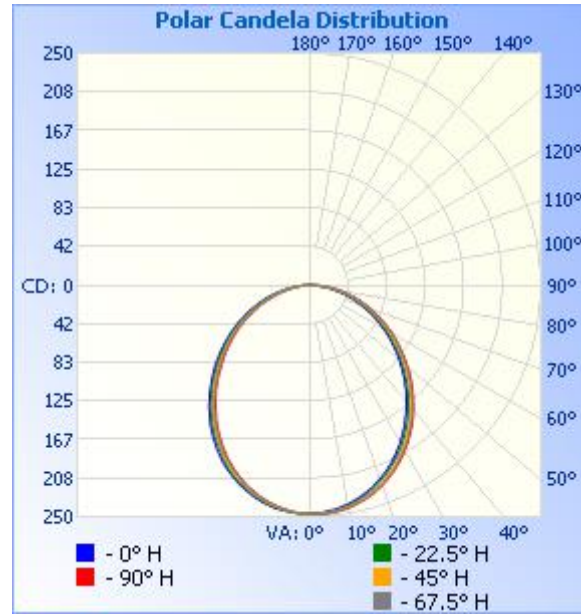
CCT=2733K (Duv=0.0002) Dominant WL:Ld =584.0nm WL:Lc = --nm Purity=60.6%

Ratio:R=25.9% G=72.0% B=2.0% Peak WL:Lp=627.3nm FWHM=153.7nm

Render Index:Ra=91.1 AvgR=88.0 TM30:Rf=90 Rg=101

R1 =91	R2 =94	R3 =95	R4 =92	R5 =91	R6 =93	R7 =92
R8 =81	R9 =56	R10=85	R11=93	R12=81	R13=92	R14=97
						R15=87

Zonal Lumen Tabulation



Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	187.0	28.8%
0-40	301.2	46.4%
0-60	514.3	79.2%
60-90	132.1	20.3%
70-100	58.4	9%
90-120	1.5	0.2%
0-90	646.4	99.5%
90-180	3.1	0.5%
0-180	649.5	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	23.3	3.6%	90-100	0.6	0.1%
10-20	65.9	10.2%	100-110	0.5	0.1%
20-30	97.8	15.1%	110-120	0.4	0.1%
30-40	114.2	17.6%	120-130	0.4	0.1%
40-50	113.8	17.5%	130-140	0.4	0.1%
50-60	99.3	15.3%	140-150	0.3	0%
60-70	74.4	11.4%	150-160	0.2	0%
70-80	43.7	6.7%	160-170	0.2	0%
80-90	14.1	2.2%	170-180	0.1	0%



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64	77	81	84	87	89	85	84	82	79	76	73	71	69	71	72	75	77
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93	1	1	1	1	1	0	1	0	1	0	0	0	0	1	1	1	1
94	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1



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95	1	1	1	1	1	0	0	0	0	0	1	0	0	1	1	1	1
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102	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1
103	1	1	1	0	1	0	0	0	0	0	0	0	0	1	1	1	1
104	0	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	0
105	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1
106	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1
107	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1
108	1	0	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1
109	1	0	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1
110	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1
111	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1
112	0	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	0
113	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	0	1
114	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1
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116	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1
117	0	0	1	1	1	0	0	0	0	0	0	0	0	1	1	1	0
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119	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1
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121	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1
122	1	1	1	1	1	0	1	0	0	0	0	0	0	1	1	1	1
123	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1
124	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1
125	1	1	1	1	1	0	0	0	0	0	1	0	1	1	1	1	1
126	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1



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127	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1
128	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1
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158	1	1	1	1	1	1	0	0	1	1	1	1	0	1	1	1	1



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159	1	1	1	1	1	0	0	0	1	0	0	0	0	1	1	1	1
160	1	1	1	1	1	0	1	0	1	0	1	1	1	1	1	1	1
161	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1
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178	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
179	1	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	1



2.2.2 Electrical, Photometric and Chromaticity Measurements	IES LM-79 2008
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Test date	2021-04-14	Test Ambient:	25 ± 1° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	LRKT411EN-5CCT(3000 K)	Total Operating Time (min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
JCE210313-DL-L1	120.0	60	0.069	7.933	0.958

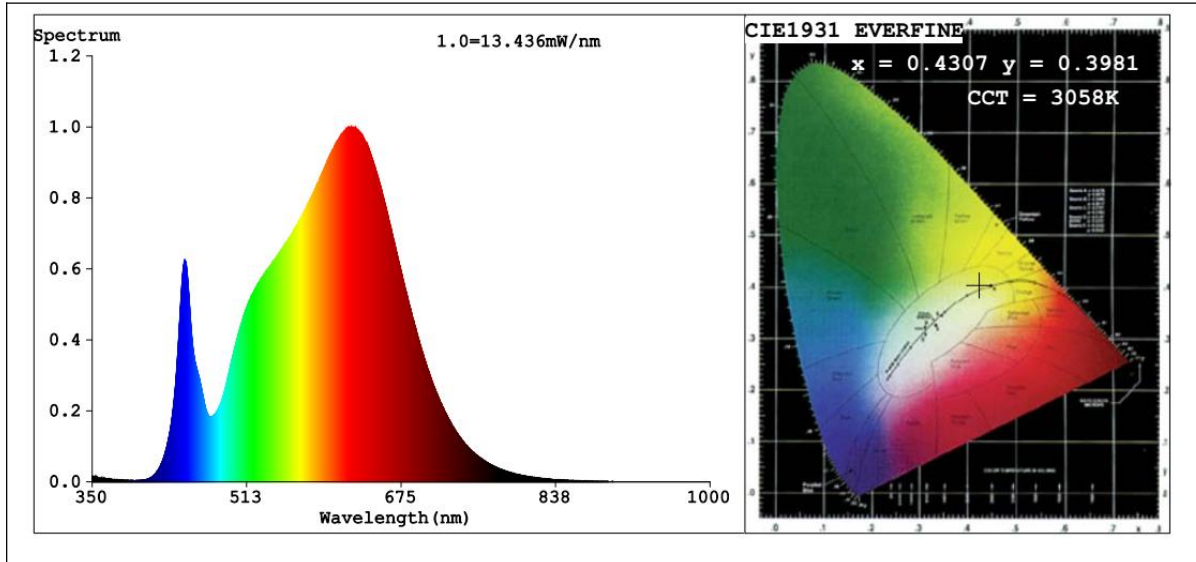
Sphere-Spectroradiometer Method(Self-absorption:1.0500):

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	92.6
R9	64
CCT (K)	3058
Duv	-0.0015

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	663.4
Luminous Efficacy (lm/W)	83.63

Spectral Power Distribution and Chromaticity Diagram



Colorimetric Parameters

Color Parameters:

Chromaticity Coordinate: $x=0.4307$ $y=0.3981$ / $u'=0.2491$ $v'=0.5181$

CCT=3058K (Duv=-0.0015) Dominant WL:Ld =583.2nm WL:Lc = --nm Purity=48.8%

Ratio:R=24.0% G=73.4% B=2.7% Peak WL:Lp=622.4nm FWHM=170.0nm

Render Index:Ra=92.6 AvgR=90.0 TM30:Rf=91 Rg=102

R1 =93	R2 =95	R3 =95	R4 =93	R5 =93	R6 =93	R7 =93	
R8 =85	R9 =64	R10=87	R11=94	R12=82	R13=94	R14=97	R15=90



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

Test date	2021-04-14	Test Ambient:	25 ± 1° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	LRKT411EN-5CCT(3500 K)	Total Operating Time (min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
JCE210313-DL-L1	120.0	60	0.069	7.929	0.958

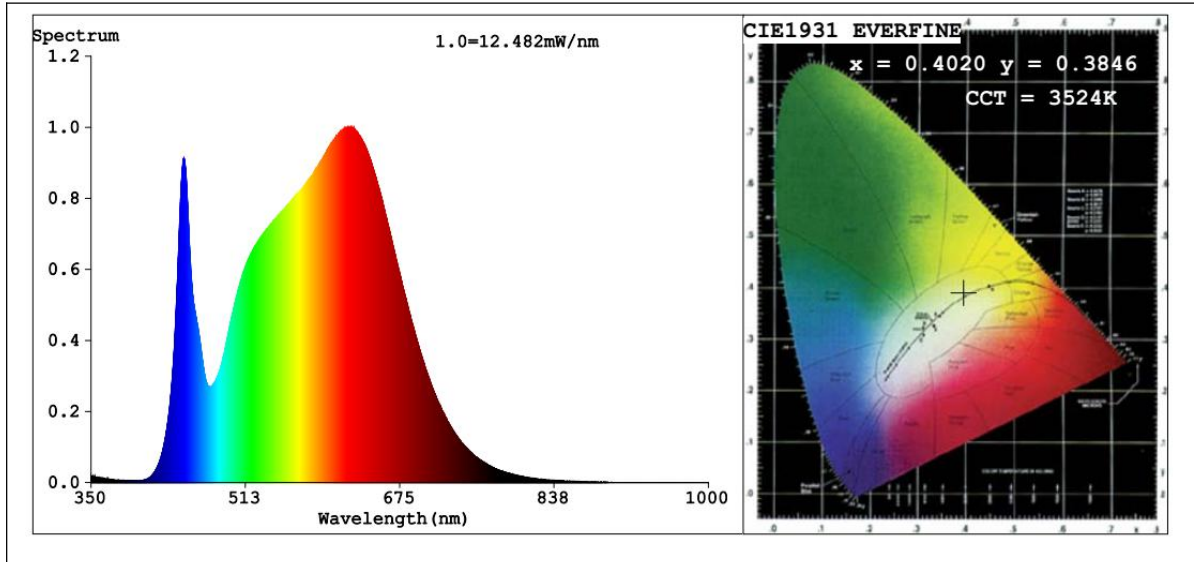
Sphere-Spectroradiometer Method(Self-absorption:1.0500):

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	93.5
R9	71
CCT (K)	3524
Duv	-0.0020

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	682.8
Luminous Efficacy (lm/W)	86.11

Spectral Power Distribution and Chromaticity Diagram



Colorimetric Parameters

Color Parameters:

Chromaticity Coordinate: $x=0.4020$ $y=0.3846$ $u'=0.2361$ $v'=0.5082$

CCT=3524K (Duv=-0.0020) Dominant WL:Ld =581.7nm WL:Lc = --nm Purity=36.1%

Ratio:R=21.8% G=74.9% B=3.4% Peak WL:Lp=620.1nm FWHM=182.2nm

Render Index:Ra=93.5 AvgR=91.0 TM30:Rf=92 Rg=102

R1 =95	R2 =95	R3 =94	R4 =94	R5 =94	R6 =93	R7 =94
R8 =89	R9 =71	R10=88	R11=94	R12=80	R13=95	R14=96 R15=93



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

Test date	2021-04-14	Test Ambient:	25 ± 1° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	LRKT411EN-5CCT(4000 K)	Total Operating Time (min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
JCE210313-DL-L1	120.0	60	0.069	7.924	0.958

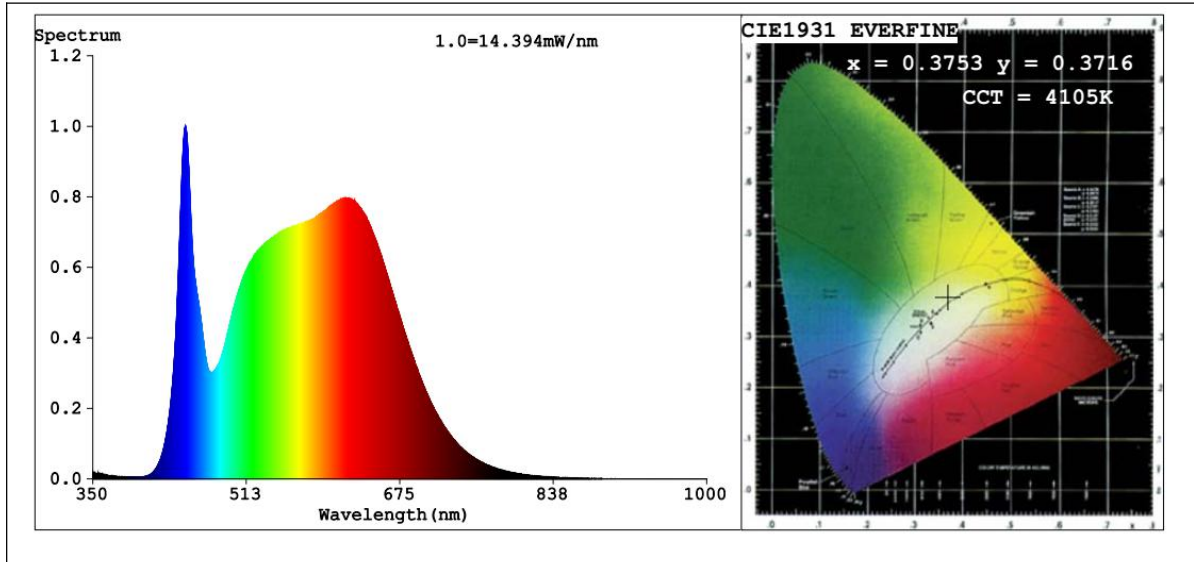
Sphere-Spectroradiometer Method(Self-absorption:1.0500):

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	93.6
R9	74
CCT (K)	4105
Duv	-0.0009

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	698.6
Luminous Efficacy (lm/W)	88.16

Spectral Power Distribution and Chromaticity Diagram



Colorimetric Parameters

Color Parameters:

Chromaticity Coordinate: $x=0.3753$ $y=0.3716$ $u'=0.2238$ $v'=0.4985$

CCT=4105K (Duv=-0.0009) Dominant WL:Ld =579.2nm WL:Lc = --nm Purity=24.2%

Ratio:R=19.6% G=76.3% B=4.1% Peak WL:Lp=448.1nm FWHM=22.7nm

Render Index:Ra=93.6 AvgR=90.9 TM30:Rf=92 Rg=101

R1 =95	R2 =95	R3 =93	R4 =94	R5 =94	R6 =92	R7 =95	
R8 =90	R9 =74	R10=87	R11=94	R12=75	R13=95	R14=96	R15=93



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

Test date	2021-04-14	Test Ambient:	25 ± 1° C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	LRKT411EN-5CCT(5000 K)	Total Operating Time (min)	61

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
JCE210313-DL-L1	120.0	60	0.069	7.902	0.958

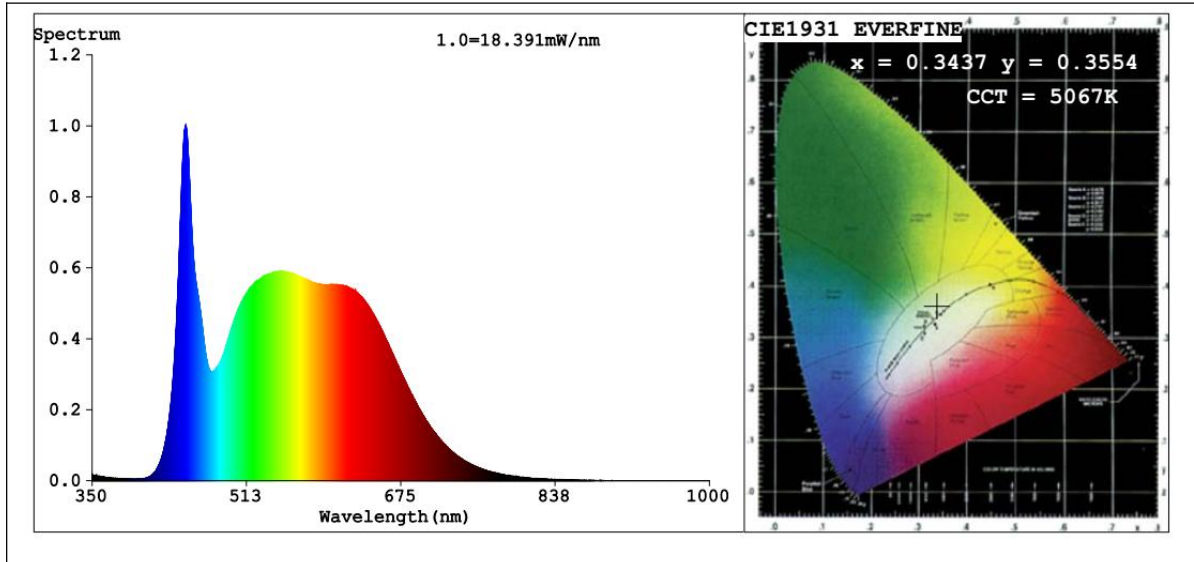
Sphere-Spectroradiometer Method(Self-absorption:1.0500):

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	92.0
R9	67
CCT (K)	5067
Duv	0.0025

Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	715.3
Luminous Efficacy (lm/W)	90.52

Spectral Power Distribution and Chromaticity Diagram



Colorimetric Parameters

Color Parameters:

Chromaticity Coordinate: $x=0.3437$ $y=0.3554$ $u'=0.2090$ $v'=0.4863$
 CCT=5067K (Duv=0.0025) Dominant WL:Ld =569.3nm WL:Lc = --nm Purity=9.8%
 Ratio:R=16.9% G=78.1% B=5.0% Peak WL:Lp=448.8nm FWHM=23.3nm
 Render Index:Ra=92.0 AvgR=88.8 TM30:Rf=91 Rg=100

R1 =92	R2 =93	R3 =93	R4 =93	R5 =92	R6 =90	R7 =94
R8 =89	R9 =67	R10=83	R11=93	R12=74	R13=92	R14=96 R15=91



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

Test date	2021-04-14	Test Ambient	25.1°C
Sample No.	Maximum Δu'v'		
JCE210313-DL-L1	0.0010		



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C0				C90			
gamma	$\Delta u'$	$\Delta v'$	$\Delta u'v'$	gamma	$\Delta u'$	$\Delta v'$	$\Delta u'v'$
0	0.00026	0.00007	0.00027	0	0.00024	-0.00012	0.00027
1	0.00021	0.00011	0.00024	1	0.00031	-0.00011	0.00033
2	0.00026	0.00007	0.00027	2	0.00031	-0.00011	0.00033
3	0.00026	0.00007	0.00027	3	0.00042	-0.00013	0.00044
4	0.00032	0.00009	0.00033	4	0.00035	-0.00015	0.00038
5	0.00026	0.00007	0.00027	5	0.00035	-0.00015	0.00038
6	0.00019	0.00006	0.00020	6	0.00037	-0.00009	0.00038
7	0.00026	0.00007	0.00027	7	0.00037	-0.00009	0.00038
8	0.00030	0.00004	0.00030	8	0.00037	-0.00009	0.00038
9	0.00030	0.00004	0.00030	9	0.00037	-0.00009	0.00038
10	0.00030	0.00004	0.00030	10	0.00042	-0.00013	0.00044
11	0.00037	0.00005	0.00037	11	0.00044	-0.00008	0.00044
12	0.00037	0.00005	0.00037	12	0.00044	-0.00008	0.00044
13	0.00030	0.00004	0.00030	13	0.00044	-0.00008	0.00044
14	0.00030	0.00004	0.00030	14	0.00050	-0.00006	0.00051
15	0.00030	0.00004	0.00030	15	0.00050	-0.00006	0.00051
16	0.00037	0.00005	0.00037	16	0.00039	-0.00004	0.00039
17	0.00037	0.00005	0.00037	17	0.00044	-0.00008	0.00044
18	0.00032	0.00009	0.00033	18	0.00050	-0.00006	0.00051
19	0.00035	0.00000	0.00035	19	0.00046	-0.00003	0.00046
20	0.00037	0.00005	0.00037	20	0.00046	-0.00003	0.00046
21	0.00030	0.00004	0.00030	21	0.00046	-0.00003	0.00046
22	0.00030	0.00004	0.00030	22	0.00046	-0.00003	0.00046
23	0.00035	0.00000	0.00035	23	0.00046	-0.00003	0.00046
24	0.00030	0.00004	0.00030	24	0.00048	0.00003	0.00048
25	0.00030	0.00004	0.00030	25	0.00048	0.00003	0.00048
26	0.00030	0.00004	0.00030	26	0.00054	0.00004	0.00054
27	0.00035	0.00000	0.00035	27	0.00046	-0.00003	0.00046
28	0.00030	0.00004	0.00030	28	0.00052	-0.00001	0.00052
29	0.00024	0.00002	0.00024	29	0.00048	0.00003	0.00048
30	0.00035	0.00000	0.00035	30	0.00041	0.00001	0.00041
31	0.00035	0.00000	0.00035	31	0.00048	0.00003	0.00048
32	0.00024	0.00002	0.00024	32	0.00048	0.00003	0.00048
33	0.00033	-0.00006	0.00033	33	0.00041	0.00001	0.00041
34	0.00028	-0.00002	0.00028	34	0.00041	0.00001	0.00041
35	0.00022	-0.00003	0.00022	35	0.00035	0.00000	0.00035
36	0.00022	-0.00003	0.00022	36	0.00035	0.00000	0.00035
37	0.00020	-0.00009	0.00022	37	0.00035	0.00000	0.00035
38	0.00020	-0.00009	0.00022	38	0.00028	-0.00002	0.00028
39	0.00020	-0.00009	0.00022	39	0.00028	-0.00002	0.00028
40	0.00007	-0.00012	0.00013	40	0.00026	-0.00007	0.00027
41	0.00007	-0.00012	0.00013	41	0.00026	-0.00007	0.00027
42	0.00011	-0.00016	0.00019	42	0.00026	-0.00007	0.00027
43	0.00007	-0.00012	0.00013	43	0.00015	-0.00005	0.00016
44	0.00005	-0.00017	0.00018	44	0.00015	-0.00005	0.00016
45	-0.00002	-0.00019	0.00019	45	0.00020	-0.00009	0.00022
46	-0.00008	-0.00020	0.00022	46	0.00018	-0.00014	0.00023
47	-0.00008	-0.00020	0.00022	47	0.00000	-0.00013	0.00013
48	-0.00021	-0.00023	0.00031	48	0.00000	-0.00013	0.00013
49	-0.00017	-0.00027	0.00032	49	0.00005	-0.00017	0.00018
50	-0.00019	-0.00032	0.00037	50	-0.00008	-0.00020	0.00022
51	-0.00023	-0.00028	0.00037	51	-0.00006	-0.00015	0.00016



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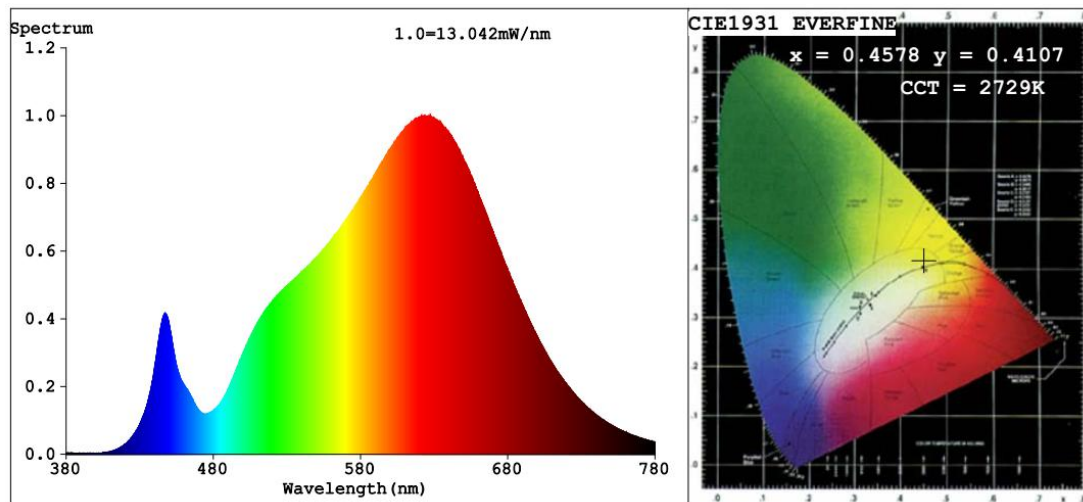
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C180				C270			
gamma	$\Delta u'$	$\Delta v'$	$\Delta u'v'$	gamma	$\Delta u'$	$\Delta v'$	$\Delta u'v'$
0	0.00026	0.00007	0.00027	0	0.00024	-0.00012	0.00027
1	0.00019	0.00006	0.00020	1	0.00031	-0.00011	0.00033
2	0.00021	0.00011	0.00024	2	0.00031	-0.00011	0.00033
3	0.00019	0.00006	0.00020	3	0.00024	-0.00012	0.00027
4	0.00015	0.00010	0.00018	4	0.00024	-0.00012	0.00027
5	0.00021	0.00011	0.00024	5	0.00024	-0.00012	0.00027
6	0.00021	0.00011	0.00024	6	0.00024	-0.00012	0.00027
7	0.00017	0.00015	0.00022	7	0.00024	-0.00012	0.00027
8	0.00017	0.00015	0.00022	8	0.00020	-0.00009	0.00022
9	0.00010	0.00014	0.00017	9	0.00020	-0.00009	0.00022
10	0.00010	0.00014	0.00017	10	0.00013	-0.00010	0.00017
11	0.00017	0.00015	0.00022	11	0.00018	-0.00014	0.00023
12	0.00012	0.00019	0.00022	12	0.00020	-0.00009	0.00022
13	0.00012	0.00019	0.00022	13	0.00013	-0.00010	0.00017
14	0.00012	0.00019	0.00022	14	0.00020	-0.00009	0.00022
15	0.00008	0.00023	0.00024	15	0.00013	-0.00010	0.00017
16	0.00008	0.00023	0.00024	16	0.00020	-0.00009	0.00022
17	0.00008	0.00023	0.00024	17	0.00013	-0.00010	0.00017
18	0.00010	0.00028	0.00030	18	0.00020	-0.00009	0.00022
19	-0.00001	0.00030	0.00030	19	0.00009	-0.00006	0.00011
20	0.00003	0.00027	0.00027	20	0.00009	-0.00006	0.00011
21	0.00003	0.00027	0.00027	21	0.00009	-0.00006	0.00011
22	-0.00001	0.00030	0.00030	22	0.00002	-0.00008	0.00008
23	0.00005	0.00032	0.00032	23	0.00009	-0.00006	0.00011
24	-0.00001	0.00030	0.00030	24	0.00009	-0.00006	0.00011
25	-0.00006	0.00034	0.00035	25	-0.00002	-0.00004	0.00005
26	-0.00006	0.00034	0.00035	26	-0.00002	-0.00004	0.00005
27	-0.00006	0.00034	0.00035	27	0.00002	-0.00008	0.00008
28	-0.00001	0.00030	0.00030	28	0.00002	-0.00008	0.00008
29	-0.00010	0.00038	0.00039	29	-0.00009	-0.00005	0.00010
30	-0.00006	0.00034	0.00035	30	-0.00004	-0.00009	0.00010
31	-0.00010	0.00038	0.00039	31	-0.00009	-0.00005	0.00010
32	-0.00017	0.00037	0.00040	32	-0.00004	-0.00009	0.00010
33	-0.00017	0.00037	0.00040	33	-0.00015	-0.00007	0.00017
34	-0.00023	0.00035	0.00042	34	-0.00015	-0.00007	0.00017
35	-0.00017	0.00037	0.00040	35	-0.00017	-0.00012	0.00021
36	-0.00030	0.00034	0.00045	36	-0.00024	-0.00014	0.00027
37	-0.00030	0.00034	0.00045	37	-0.00024	-0.00014	0.00027
38	-0.00030	0.00034	0.00045	38	-0.00024	-0.00014	0.00027
39	-0.00036	0.00032	0.00048	39	-0.00033	-0.00006	0.00033
40	-0.00041	0.00036	0.00054	40	-0.00026	-0.00019	0.00032
41	-0.00041	0.00036	0.00054	41	-0.00037	-0.00017	0.00040
42	-0.00041	0.00036	0.00054	42	-0.00039	-0.00022	0.00045
43	-0.00054	0.00033	0.00063	43	-0.00050	-0.00020	0.00053
44	-0.00056	0.00028	0.00062	44	-0.00045	-0.00024	0.00051
45	-0.00062	0.00026	0.00067	45	-0.00052	-0.00025	0.00057
46	-0.00067	0.00030	0.00073	46	-0.00062	-0.00023	0.00067
47	-0.00069	0.00025	0.00073	47	-0.00060	-0.00032	0.00068
48	-0.00075	0.00023	0.00078	48	-0.00066	-0.00034	0.00074
49	-0.00071	0.00019	0.00073	49	-0.00066	-0.00034	0.00074
50	-0.00081	0.00022	0.00084	50	-0.00073	-0.00035	0.00081
51	-0.00081	0.00022	0.00084	51	-0.00075	-0.00040	0.00085

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
Noted: The noise test and data are not covered by A2LA accreditation	

Test date	2021-04-14		Test Ambient:	25±1° C
Dimmer Technology			Forward phase-cut	
Sample No.		Maximum Level	Minimum Level	
JCE210313-DL-L1	Input: 120.0V / 60Hz	Light outout(Lumen)	608.7	31.33
		Percentage	93.72%	5.15%



Color Parameters:

Chromaticity Coordinate: $x=0.4578$ $y=0.4107$ / $u'=0.2612$ $v'=0.5271$
 CCT=2729K (Duv=0.0002) Dominant WL:Ld =584.0nm WL:Lc = --nm Purity=60.7%
 Ratio:R=25.9% G=72.0% B=2.0% Peak WL:Lp=627.3nm FWHM=153.4nm
 Render Index:Ra=91.2 AvgR=88.1 TM30:Rf=90 Rg=101

R1 =91 R2 =94 R3 =95 R4 =92 R5 =91 R6 =93 R7 =92
 R8 =81 R9 =57 R10=85 R11=93 R12=81 R13=92 R14=97 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	13.7	Dimmer adjusted to lowest light output	< 1 m



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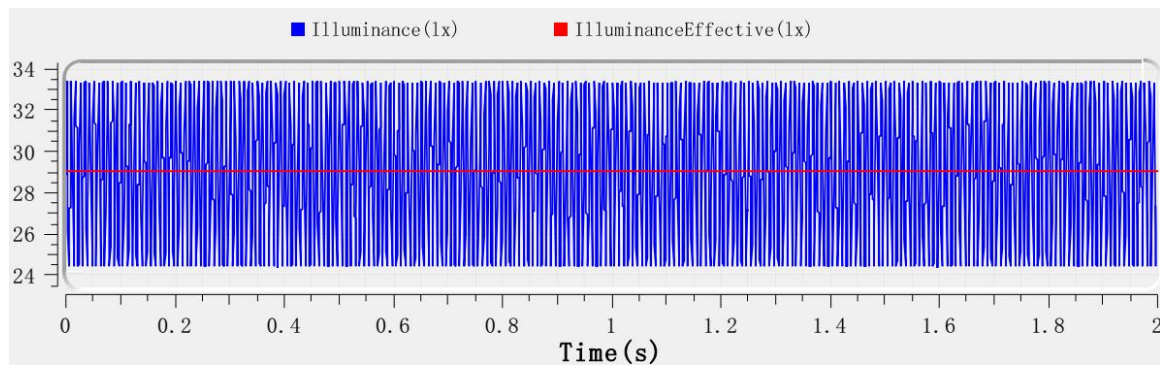
Dimming Technology	Forward phase-cut
Dimmer	LUTRON MACL-153M

Item	Short Term Flicker Indicator (Pst)	Stroboscopic Visibility Measure (SVM)
Maximum conduction	0.116	0.604
Intermediate conduction	0.276	0.941
Minimum conduction	0.933	0.459



2.6 Operating 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	2021-04-14	Test Ambient:	25±1° C
Sample No.	Operating Frequency (Hz)		
JCE210313-DL-L1	120.000		

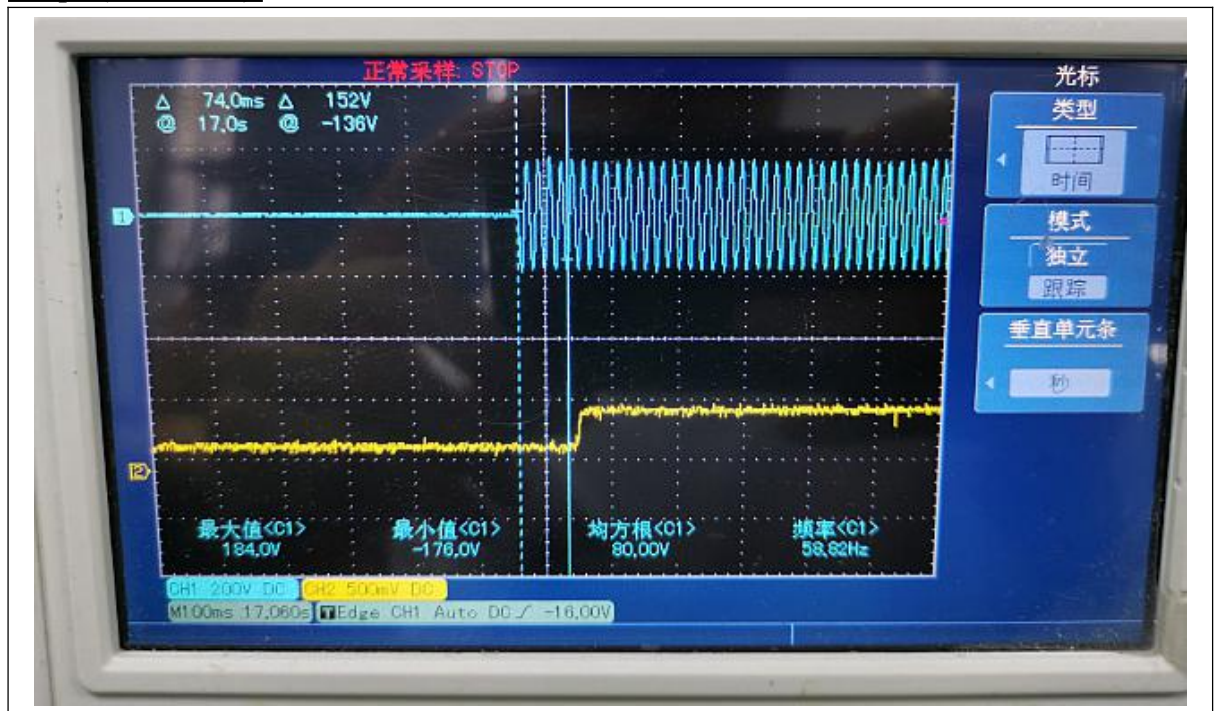




2.7 Starting Time	ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2
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Test date	2021-04-14	Test Ambient:	25±1° C
Sample No.	Start Time (ms)		
JCE210313-DL-L1	74.0		

Graph (Start Time):





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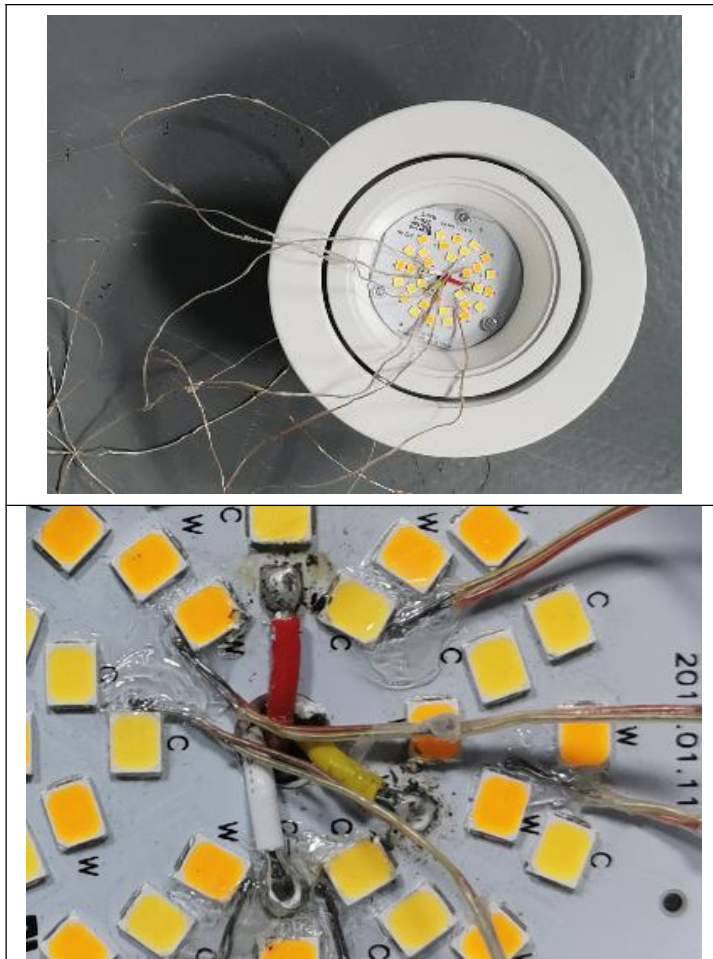
Test voltage: 120V,60Hz

Test date	2021-04-14	Test Ambient	25±1° C
Sample No.		Transient Protection Test - Seven Strikes	
JCE210313-DL-L1		Survival	

2.9 In-Situ Temperature Measurement Test (ISTMT) | UL1598-2008, 3rd Edition

Test date	2021-04-14	Test Ambient	25±5° C
Input Vol./Frequency	120.0V / 60Hz	Output Current of Single LED(mA)	145.4
Sample No.	LED Package Model	Maximum Measured LED Ts Point Temperature (°C)	Maximum permitted Ts temperature for L70 ≥ 50,000 hrs (°C)
JCE210313-DL-L1	67-21S Series	82.3	105

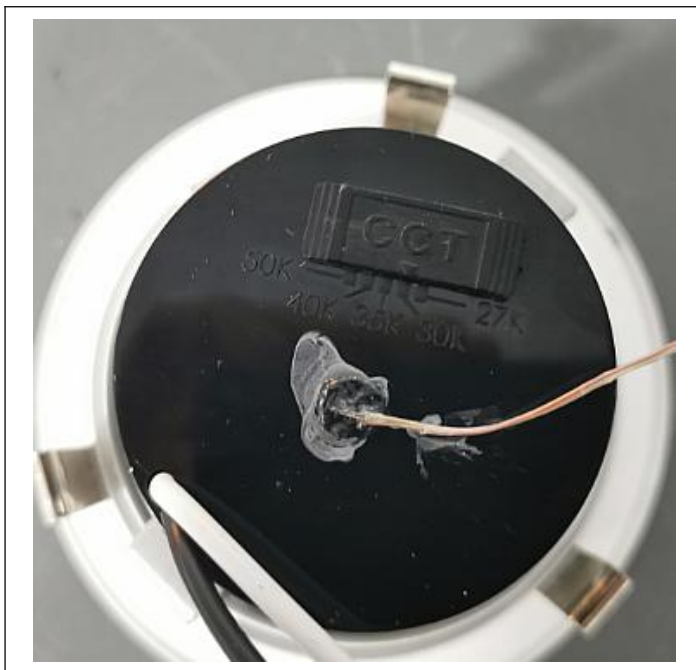
In-Situ Picture - Ts:



2.10 Maximum Measured Ballast or Driver Case Temperature	UL1598-2008, 3rd Edition
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Test date	2021-04-14	Test Ambient	25±5° C
Sample No.	Maximum Measured Driver Case Temperature (°C)	Maximum Driver Case Temperature Limited (°C)	
JCE210313-DL-L1	76.4	105	

In-Situ Picture - Ts:





2.11 Standby Power Consumption:	ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2
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Test date	2021-04-14	Test Ambient:	25±1° C
Model Number	LRKT411EN-5CCT(2700K)	Stabilization Time (min)	60

Electrical Measurement – when the luminaires turned off:

Sample No.	Standby Power Consumption(W):
JCE210313-DL-L1	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	2021-04-14	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	2021-04-14	2022-04-06
ST-R-S-027	Digital Luxmeter	2021-04-08	2022-04-07
ST-R-S-016	Oscillograph	2021-04-14	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 *****