



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):

## SLKT600/603-5CCT

**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

**Update:** 2021-07-20

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.



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### Revision Details

Report No. Revision	Revised Item:	Revised Reason	Issue date
JCE210313-DL-G	Adding “%” in dimming	Handwriting mistake	2021-06-07
JCE210313-DL-G-R			2021-07-20



<b>1.1 Product Information:</b>		
Model Number	SLKT600/603-5CCT	
Remark	N/A	
Representative (Tested) Model	SLKT600/603-5CCT(2700K) SLKT600/603-5CCT(3000K) SLKT600/603-5CCT(3500K) SLKT600/603-5CCT(4000K) SLKT600/603-5CCT(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-G1	
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.

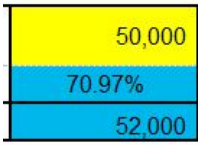
### 2) Chromaticity Measurement – Sphere-Spectroradiometer Method:

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	14.41W	Pass
Luminous Efficacy	Downlight retrofits	≥60 lm/W	73.54lm/W	Pass
Luminaire Minimum Light Output	Downlight retrofits	≤ 4.5" aperture: 345 lumens > 4.5" aperture: 575 lumens	1059.7lm	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	2707K Duv=-0.0009	Pass
Color Rendering Index (CRI)	Downlight retrofits	Ra ≥ 80 R9 >0	Ra =91.1 R9 =57	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)	89.1	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.	0.0019	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>70.97%</td> </tr> <tr> <td>52,000</td> </tr> </table>	50,000	70.97%	52,000	Pass
50,000							
70.97%							
52,000							
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	60.0ms	Pass			
Power Factor	Solid State	Total luminaire input power ≤ 5 watts: PF ≥ 0.5 Total luminaire input power > 5 watts: PF ≥ 0.7	0.978	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	120.023Hz	Pass			
Maximum Measured Driver Case Temperature	Solid State	shall not exceed the driver manufacturer's maximum recommended temperature during in situ operation. ≤ 105 °C	101.3°C	Pass			
Maximum In-Situ Source Temperature	Solid State	Maximum permitted Ts temperature for L70≥50,000 hrs ≤ 105°C	97.3°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 “\*”.



<b>2.2.1 Electrical, Photometric and Chromaticity Measurements</b>	<b>IES LM-79 2008</b>
--------------------------------------------------------------------	-----------------------

<b>Test date</b>	2021-04-09	<b>Test Ambient:</b>	25 ± 1° C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	60
<b>Model Number</b>	SLKT600/603-5CCT(2700 K)	<b>Total Operating Time (min)</b>	75

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
JCE210313-DL-G1	120.0	60	0.123	14.41	0.978

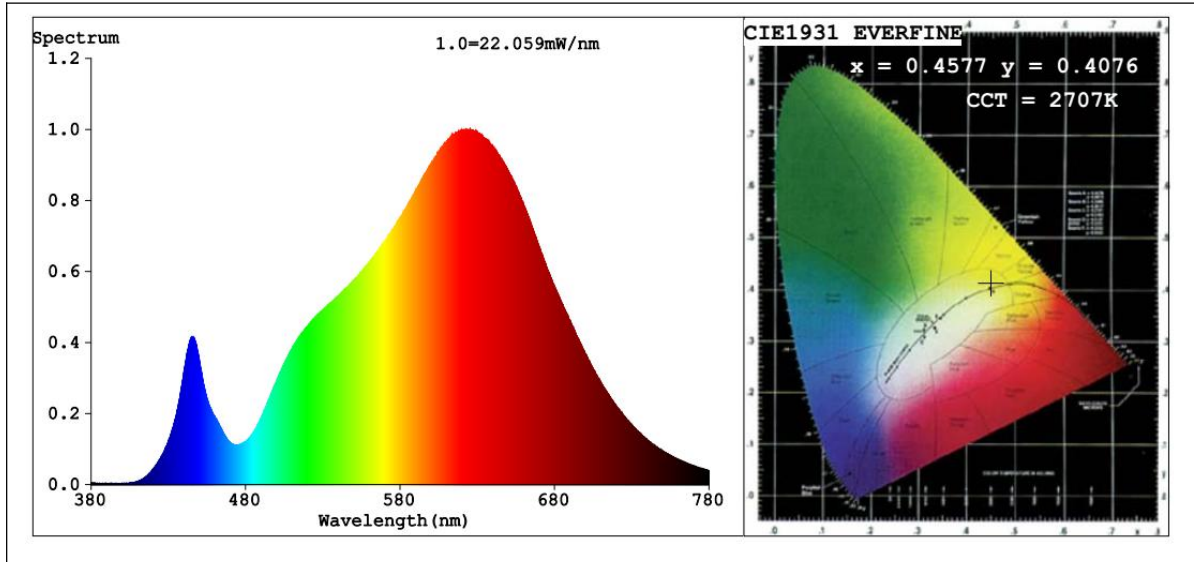
**Sphere-Spectroradiometer Method(Self-absorption:1.0667):**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	91.1
R9	57
CCT (K)	2707
Duv	-0.0009

**Goniophotometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1059.7
Luminous Efficacy (lm/W)	73.54
Beam Angle°	95.8
Center Beam Candle Power (cd)	486

### Spectral Power Distribution and Chromaticity Diagram



### Colorimetric Parameters

#### Color Parameters:

Chromaticity Coordinate:  $x=0.4577$   $y=0.4076$   $u'=0.2625$   $v'=0.5259$

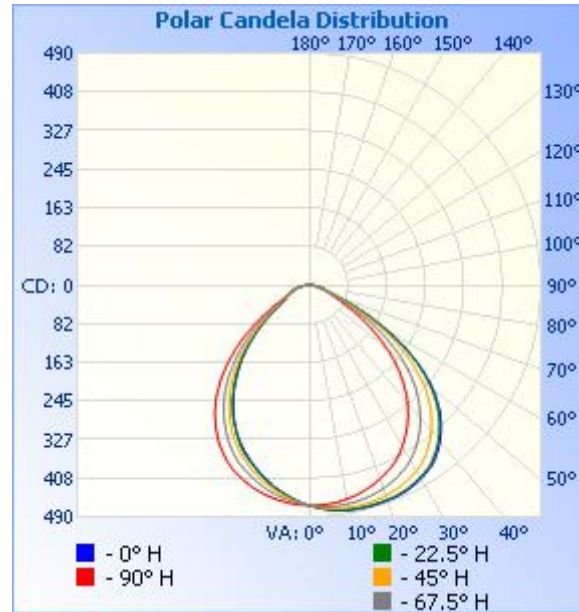
CCT=2707K (Duv=-0.0009) Dominant WL:Ld =584.5nm WL:Lc = --nm Purity=59.7%

Ratio:R=26.2% G=71.8% B=2.0% Peak WL:Lp=625.3nm FWHM=153.7nm

Render Index:Ra=91.1 AvgR=88.3 TM30:Rf=88 Rg=102

R1 =92	R2 =94	R3 =95	R4 =92	R5 =91	R6 =93	R7 =91
R8 =81	R9 =57	R10=85	R11=93	R12=83	R13=92	R14=96 R15=88

### Zonal Lumen Tabulation



Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	362.1	34.2%
0-40	587.3	55.4%
0-60	943.5	89.1%
60-90	111.0	10.5%
70-100	42.7	4%
90-120	1.3	0.1%
0-90	1,054.6	99.5%
90-180	5.0	0.5%
0-180	1,059.5	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	44.1	4.2%	90-100	0.4	0%
10-20	126.3	11.9%	100-110	0.4	0%
20-30	191.7	18.1%	110-120	0.5	0%
30-40	225.2	21.3%	120-130	0.7	0.1%
40-50	211.8	20.0%	130-140	0.9	0.1%
50-60	144.5	13.6%	140-150	0.8	0.1%
60-70	68.7	6.5%	150-160	0.7	0.1%
70-80	31.4	3.0%	160-170	0.4	0%
80-90	10.8	1.0%	170-180	0.1	0%



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	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466	466
1	468	468	467	467	466	465	465	463	463	463	463	464	465	467	468	468	468
2	470	470	469	468	466	464	462	461	460	460	461	463	465	468	469	470	470
3	473	473	471	469	465	463	460	458	457	457	459	462	464	468	471	472	473
4	475	474	472	469	465	462	458	455	454	454	457	460	464	468	472	474	475
5	477	476	473	470	464	460	456	452	450	451	454	458	463	468	473	475	477
6	478	477	475	470	464	458	453	449	447	448	450	455	462	468	474	477	478
7	479	479	475	470	463	457	450	446	443	444	448	453	460	468	474	478	479
8	481	480	476	470	462	454	448	441	440	441	444	451	459	468	475	479	481
9	482	481	477	470	461	452	444	438	435	437	441	448	458	467	475	480	482
10	483	482	477	470	459	450	441	434	432	433	438	446	456	467	476	481	483
11	484	482	477	469	458	447	437	430	427	429	435	443	454	466	476	482	484
12	484	483	478	469	456	445	433	426	422	425	430	440	452	465	476	482	484
13	484	483	478	468	454	442	430	421	418	420	427	436	450	464	476	482	484
14	485	483	478	467	452	439	426	417	413	415	422	433	448	462	475	483	485
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16	485	483	477	464	447	433	418	408	403	405	414	426	443	459	474	482	485
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20	484	483	473	458	436	418	400	388	383	386	396	410	430	450	469	481	484
21	484	482	472	456	433	414	396	383	378	382	390	406	427	448	467	480	484
22	484	482	471	453	430	410	390	378	372	375	385	401	424	445	466	479	484
23	483	481	469	451	426	406	385	372	367	370	380	397	419	443	464	478	483
24	482	480	468	448	423	401	380	366	361	364	373	391	415	439	462	476	482
25	482	478	466	445	419	396	374	361	354	356	368	385	411	436	459	475	482
26	480	477	464	442	415	390	369	354	349	350	361	380	405	432	457	473	480
27	478	475	462	439	410	384	362	346	341	342	355	373	399	428	454	471	478
28	477	473	459	435	405	379	355	340	333	335	348	366	394	423	451	469	477
29	475	471	456	432	400	372	349	332	327	329	340	360	388	418	448	466	475
30	473	469	453	427	393	367	341	326	319	322	334	353	382	413	444	464	473



Certificate #4703.03

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31	470	466	450	423	388	359	333	318	310	314	326	345	375	407	440	461	470
32	468	463	447	417	381	352	327	309	304	305	318	339	368	401	435	458	468
33	464	461	442	412	375	346	318	302	295	298	311	330	362	394	430	454	464
34	462	457	438	406	368	338	310	294	286	289	302	322	354	389	424	450	462
35	457	453	432	401	362	329	303	285	279	280	293	315	346	381	419	445	457
36	453	448	427	394	354	321	294	275	269	271	286	306	339	375	412	440	453
37	448	443	421	388	347	314	285	268	260	264	276	297	331	367	406	434	448
38	443	437	415	380	339	305	277	259	250	254	267	290	321	360	398	429	443
39	436	432	408	374	332	295	268	249	242	244	257	280	314	351	392	422	436
40	430	425	402	365	323	288	258	241	232	236	249	270	304	343	384	416	430
41	423	419	394	357	315	278	248	231	222	226	239	261	294	334	377	408	423
42	417	411	387	350	305	267	240	220	214	215	228	251	283	324	367	399	417
43	408	404	378	340	295	259	229	212	203	207	220	240	274	315	360	392	408
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45	392	388	361	322	276	237	209	190	184	185	198	219	251	295	339	375	392
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47	374	370	342	302	255	216	186	170	161	165	177	195	229	273	317	355	374
48	363	359	333	292	245	204	177	158	152	153	165	186	216	260	307	344	363
49	353	347	321	280	232	194	165	149	140	144	155	173	205	249	294	333	353
50	340	337	308	269	222	181	156	138	131	132	143	164	192	235	282	320	340
51	330	324	297	256	209	172	144	126	120	121	132	151	181	220	268	309	330
52	315	312	283	245	199	159	132	117	108	111	123	139	168	209	255	293	315
53	303	297	271	230	185	147	123	106	99	101	111	130	155	194	239	281	303
54	287	285	256	215	172	137	111	97	89	92	103	118	145	182	226	264	287
55	273	268	243	203	161	125	101	87	80	83	92	106	132	168	209	250	273
56	255	254	227	188	148	113	92	78	73	74	83	98	119	156	192	232	255
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62	153	156	136	111	85	63	55	56	56	55	53	54	64	86	107	134	153



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63	138	138	121	101	77	58	53	54	55	54	52	50	57	76	97	117	138
64	120	124	109	89	69	53	52	53	53	53	50	48	51	68	84	105	120
65	107	107	95	81	63	50	51	52	52	51	49	46	47	60	75	90	107
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67	80	81	73	64	52	46	48	48	48	47	46	43	41	48	57	68	80
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72	37	40	39	38	38	39	39	38	37	36	35	35	33	32	31	33	37
73	33	34	35	35	37	38	37	36	34	33	33	33	32	30	29	29	33
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75	25	27	29	31	35	34	33	31	30	29	28	29	28	28	25	24	25
76	22	24	26	30	33	32	30	29	28	26	27	26	27	27	24	21	22
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79	18	19	23	26	28	25	23	22	21	20	20	20	20	22	21	18	18
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82	15	17	19	21	22	18	17	15	15	14	13	13	13	17	17	15	15
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84	13	13	16	17	17	13	13	12	11	10	9	8	8	13	13	12	13
85	11	12	13	15	15	11	10	10	8	8	7	6	6	10	11	10	11
86	9	10	11	13	12	9	8	7	6	5	4	3	3	8	8	8	9
87	7	7	8	11	10	6	6	4	4	3	2	1	1	5	6	6	7
88	3	5	6	8	8	4	3	2	2	1	1	0	0	3	3	3	3
89	1	1	2	5	6	1	1	1	1	1	0	0	0	1	1	1	1
90	1	1	1	1	1	0	0	0	1	1	0	0	0	1	1	1	1
91	0	1	1	0	0	0	0	1	1	0	0	0	0	1	1	0	0
92	1	0	0	0	1	0	0	1	1	0	0	0	0	0	1	1	1
93	0	0	1	0	0	0	0	1	1	0	0	0	0	1	0	1	0
94	1	0	0	0	0	0	0	1	0	1	0	0	0	1	1	1	1



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95	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
96	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
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109	0	0	0	0	1	0	0	0	1	1	0	0	0	1	0	0	0
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115	0	0	1	0	1	1	1	1	1	1	1	0	0	1	1	0	0
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126	1	1	1	1	1	1	1	1	1	1	2	2	1	0	1	1	1





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127	1	1	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1
128	1	1	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1
129	1	0	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1
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158	1	1	1	1	1	1	2	3	2	3	2	1	1	1	1	1	1



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159	1	1	1	1	1	1	2	3	2	3	2	1	1	1	1	1	1
160	1	1	1	1	1	1	2	3	1	3	2	1	1	1	1	1	1
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173	1	1	1	1	1	2	2	2	3	2	1	1	1	1	1	1	1
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179	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1
180	1	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>
--------------------------------------------------------------------	-----------------------

<b>Test date</b>	2021-04-09	<b>Test Ambient:</b>	25 ± 1° C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	60
<b>Model Number</b>	SLKT600/603-5CCT(3000 K)	<b>Total Operating Time (min)</b>	61

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
JCE210313-DL-G1	120.0	60	0.125	14.47	0.968

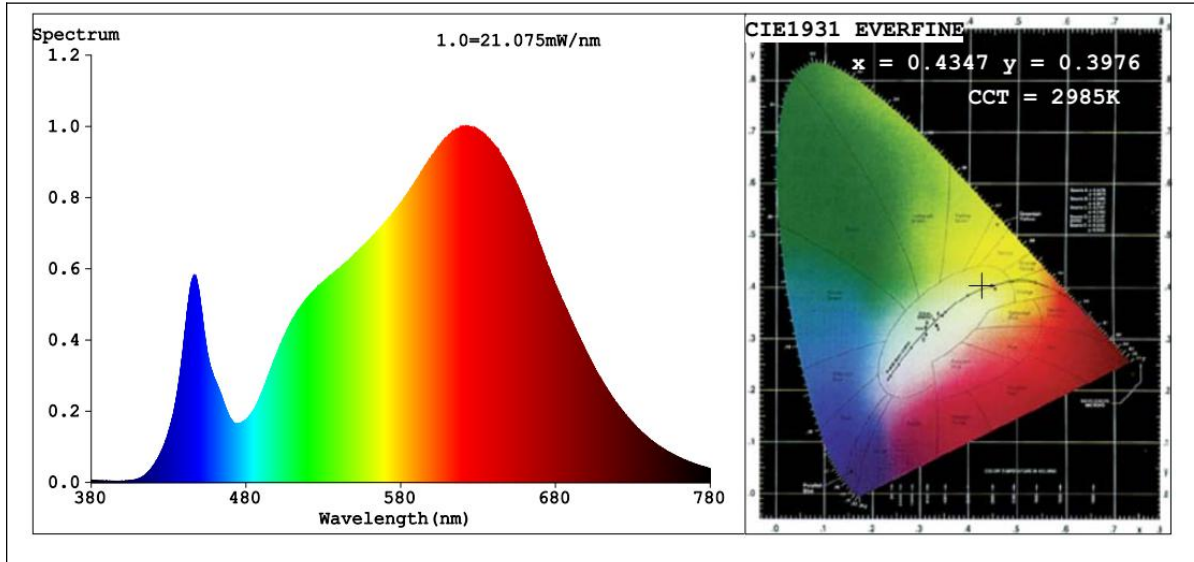
**Sphere-Spectroradiometer Method(Self-absorption:1.0667):**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	92.7
R9	65
CCT (K)	2985
Duv	-0.0023

**Sphere-Spectroradiometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1087
Luminous Efficacy (lm/W)	75.12

### Spectral Power Distribution and Chromaticity Diagram



### Colorimetric Parameters

#### Color Parameters:

Chromaticity Coordinate:  $x=0.4347$   $y=0.3976$   $u'=0.2519$   $v'=0.5185$   
 CCT=2985K (Duv=-0.0023) Dominant WL:Ld =583.7nm WL:Lc = --nm Purity=49.8%  
 Ratio:R=24.5% G=73.0% B=2.5% Peak WL:Lp=622.4nm FWHM=169.0nm  
 Render Index:Ra=92.7 AvgR=90.3 TM30:Rf=90 Rg=103

R1 =94	R2 =95	R3 =95	R4 =93	R5 =93	R6 =94	R7 =93
R8 =85	R9 =65	R10=88	R11=94	R12=84	R13=94	R14=96 R15=91



<b>2.2.3 Electrical, Photometric and Chromaticity Measurements</b>	<b>IES LM-79 2008</b>
--------------------------------------------------------------------	-----------------------

<b>Test date</b>	2021-04-09	<b>Test Ambient:</b>	25 ± 1° C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	60
<b>Model Number</b>	SLKT600/603-5CCT(3500 K)	<b>Total Operating Time (min)</b>	61

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
JCE210313-DL-G1	120.0	60	0.125	14.56	0.968

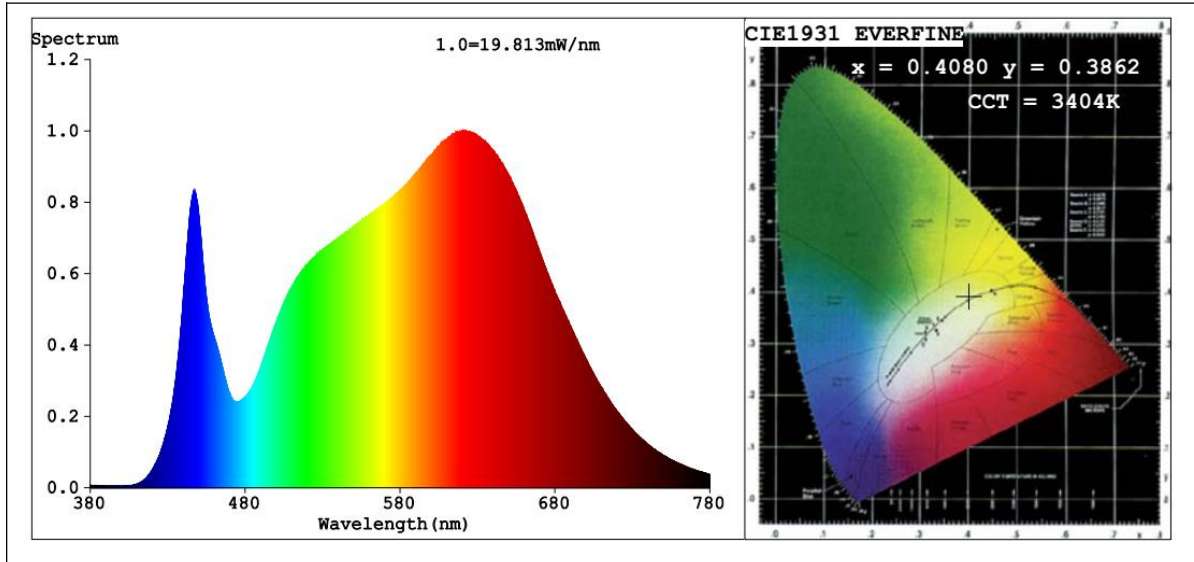
**Sphere-Spectroradiometer Method(Self-absorption:1.0667):**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	93.7
R9	73
CCT (K)	3404
Duv	-0.0026

**Sphere-Spectroradiometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1122
Luminous Efficacy (lm/W)	77.06

### Spectral Power Distribution and Chromaticity Diagram



### Colorimetric Parameters

#### Color Parameters:

Chromaticity Coordinate:  $x=0.4080$   $y=0.3862$   $u'=0.2393$   $v'=0.5098$

CCT=3404K (Duv=-0.0026) Dominant WL:Ld =582.4nm WL:Lc = --nm Purity=38.4%

Ratio:R=22.4% G=74.4% B=3.2% Peak WL:Lp=620.7nm FWHM=181.6nm

Render Index:Ra=93.7 AvgR=91.5 TM30:Rf=91 Rg=103

R1 =95	R2 =95	R3 =94	R4 =94	R5 =95	R6 =93	R7 =94
R8 =89	R9 =73	R10=88	R11=94	R12=82	R13=95	R14=96 R15=93



<b>2.2.4 Electrical, Photometric and Chromaticity Measurements</b>	<b>IES LM-79 2008</b>
--------------------------------------------------------------------	-----------------------

<b>Test date</b>	2021-04-09	<b>Test Ambient:</b>	25 ± 1° C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	60
<b>Model Number</b>	SLKT600/603-5CCT(4000 K)	<b>Total Operating Time (min)</b>	61

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
JCE210313-DL-G1	120.0	60	0.126	14.64	0.968

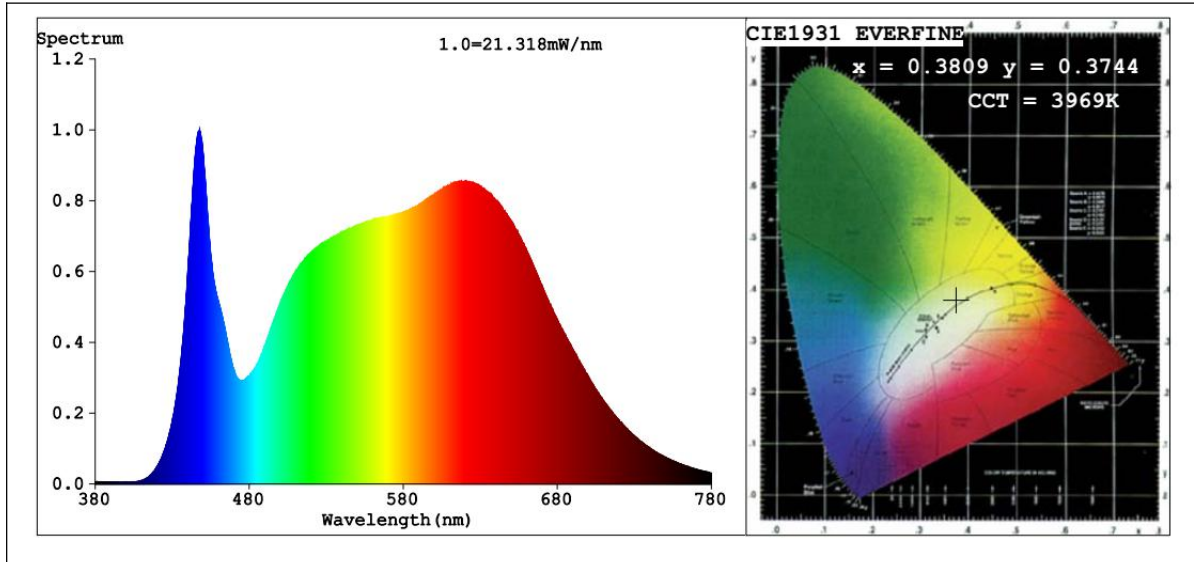
**Sphere-Spectroradiometer Method(Self-absorption:1.0667):**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	93.9
R9	76
CCT (K)	3969
Duv	-0.0013

**Sphere-Spectroradiometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1145
Luminous Efficacy (lm/W)	78.21

### Spectral Power Distribution and Chromaticity Diagram



### Colorimetric Parameters

#### Color Parameters:

Chromaticity Coordinate:  $x=0.3809$   $y=0.3744$   $u'=0.2264$   $v'=0.5006$

CCT=3969K (Duv=-0.0013) Dominant WL:Ld =579.9nm WL:Lc = --nm Purity=26.7%

Ratio:R=20.1% G=76.0% B=3.9% Peak WL:Lp=447.8nm FWHM=22.4nm

Render Index:Ra=93.9 AvgR=91.4 TM30:Rf=92 Rg=102

R1 =95	R2 =95	R3 =93	R4 =95	R5 =95	R6 =92	R7 =95
R8 =91	R9 =76	R10=87	R11=94	R12=77	R13=95	R14=96 R15=94





<b>2.2.5 Electrical, Photometric and Chromaticity Measurements</b>	<b>IES LM-79 2008</b>
--------------------------------------------------------------------	-----------------------

<b>Test date</b>	2021-04-09	<b>Test Ambient:</b>	25 ± 1° C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	60
<b>Model Number</b>	SLKT600/603-5CCT(5000 K)	<b>Total Operating Time (min)</b>	61

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
JCE210313-DL-G1	120.0	60	0.127	14.73	0.968

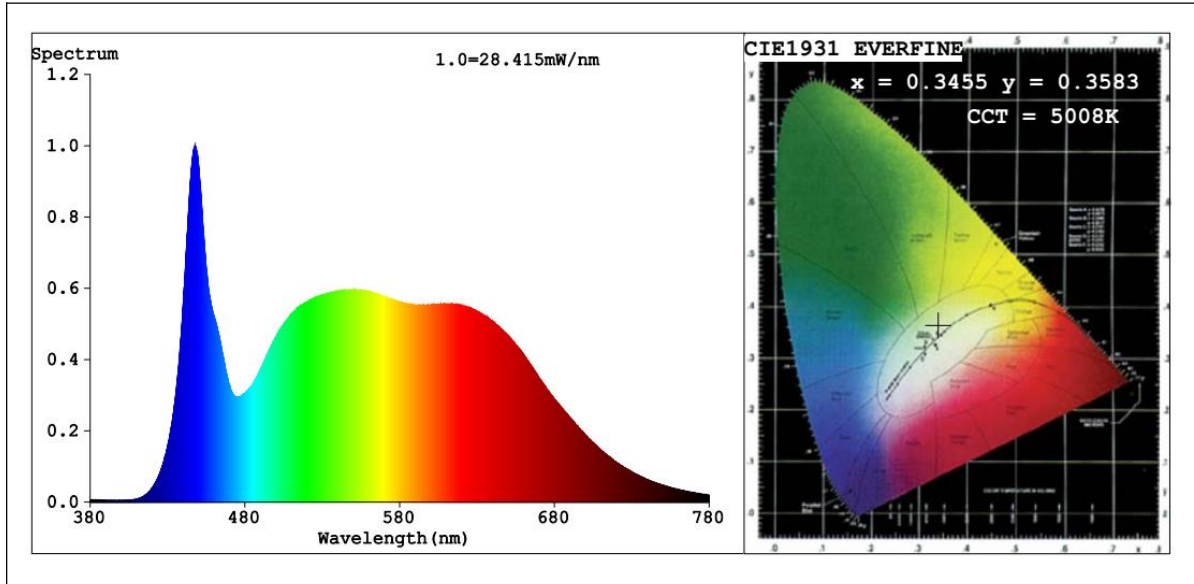
**Sphere-Spectroradiometer Method(Self-absorption:1.0667):**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	91.9
R9	68
CCT (K)	5008
Duv	0.0032

**Sphere-Spectroradiometer Method:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	1165
Luminous Efficacy (lm/W)	79.08

### Spectral Power Distribution and Chromaticity Diagram



### Colorimetric Parameters

#### Color Parameters:

Chromaticity Coordinate:  $x=0.3455$   $y=0.3583$  /  $u'=0.2091$   $v'=0.4880$   
 CCT=5008K (Duv=0.0032) Dominant WL:Ld =569.7nm WL:Lc = --nm Purity=11.2%  
 Ratio:R=17.0% G=78.1% B=4.9% Peak WL:Lp=447.8nm FWHM=22.1nm  
 Render Index:Ra=91.9 AvgR=88.7 TM30:Rf=92 Rg=101

R1 =92	R2 =93	R3 =92	R4 =93	R5 =92	R6 =90	R7 =94	
R8 =89	R9 =68	R10=82	R11=93	R12=74	R13=92	R14=95	R15=91



<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:

Test date	2021-04-09	Test Ambient	25.1°C
Sample No.	Maximum $\Delta u'v'$		
JCE210313-DL-G1	0.0019		



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C0				C90			
gamma	$\Delta u'$	$\Delta v'$	$\Delta u'v'$	gamma	$\Delta u'$	$\Delta v'$	$\Delta u'v'$
0	0.00025	0.00025	0.00035	0	0.00017	0.00003	0.00017
1	0.00025	0.00025	0.00035	1	0.00024	0.00005	0.00024
2	0.00025	0.00025	0.00035	2	0.00022	-0.00001	0.00022
3	0.00019	0.00023	0.00030	3	0.00028	0.00001	0.00028
4	0.00030	0.00021	0.00036	4	0.00022	-0.00001	0.00022
5	0.00025	0.00025	0.00035	5	0.00026	-0.00004	0.00027
6	0.00025	0.00025	0.00035	6	0.00033	-0.00003	0.00033
7	0.00023	0.00019	0.00030	7	0.00031	-0.00008	0.00032
8	0.00019	0.00023	0.00030	8	0.00031	-0.00008	0.00032
9	0.00030	0.00021	0.00036	9	0.00031	-0.00008	0.00032
10	0.00023	0.00019	0.00030	10	0.00031	-0.00008	0.00032
11	0.00030	0.00021	0.00036	11	0.00035	-0.00012	0.00037
12	0.00030	0.00021	0.00036	12	0.00031	-0.00008	0.00032
13	0.00030	0.00021	0.00036	13	0.00035	-0.00012	0.00037
14	0.00030	0.00021	0.00036	14	0.00035	-0.00012	0.00037
15	0.00030	0.00021	0.00036	15	0.00042	-0.00011	0.00043
16	0.00030	0.00021	0.00036	16	0.00040	-0.00016	0.00043
17	0.00030	0.00021	0.00036	17	0.00040	-0.00016	0.00043
18	0.00030	0.00021	0.00036	18	0.00046	-0.00015	0.00049
19	0.00034	0.00017	0.00038	19	0.00046	-0.00015	0.00049
20	0.00030	0.00021	0.00036	20	0.00046	-0.00015	0.00049
21	0.00030	0.00021	0.00036	21	0.00046	-0.00015	0.00049
22	0.00030	0.00021	0.00036	22	0.00046	-0.00015	0.00049
23	0.00030	0.00021	0.00036	23	0.00053	-0.00013	0.00054
24	0.00030	0.00021	0.00036	24	0.00053	-0.00013	0.00054
25	0.00030	0.00021	0.00036	25	0.00053	-0.00013	0.00054
26	0.00036	0.00022	0.00042	26	0.00053	-0.00013	0.00054
27	0.00034	0.00017	0.00038	27	0.00053	-0.00013	0.00054
28	0.00030	0.00021	0.00036	28	0.00053	-0.00013	0.00054
29	0.00034	0.00017	0.00038	29	0.00059	-0.00012	0.00060
30	0.00034	0.00017	0.00038	30	0.00059	-0.00012	0.00060
31	0.00034	0.00017	0.00038	31	0.00055	-0.00008	0.00055
32	0.00028	0.00016	0.00032	32	0.00055	-0.00008	0.00055
33	0.00028	0.00016	0.00032	33	0.00055	-0.00008	0.00055
34	0.00028	0.00016	0.00032	34	0.00061	-0.00006	0.00062
35	0.00032	0.00012	0.00034	35	0.00059	-0.00012	0.00060
36	0.00032	0.00012	0.00034	36	0.00061	-0.00006	0.00062
37	0.00032	0.00012	0.00034	37	0.00066	-0.00010	0.00067
38	0.00030	0.00006	0.00031	38	0.00066	-0.00010	0.00067
39	0.00024	0.00005	0.00024	39	0.00059	-0.00012	0.00060
40	0.00024	0.00005	0.00024	40	0.00061	-0.00006	0.00062
41	0.00024	0.00005	0.00024	41	0.00066	-0.00010	0.00067
42	0.00015	-0.00002	0.00015	42	0.00066	-0.00010	0.00067
43	0.00015	-0.00002	0.00015	43	0.00066	-0.00010	0.00067
44	0.00020	-0.00006	0.00021	44	0.00066	-0.00010	0.00067
45	0.00011	-0.00013	0.00017	45	0.00070	-0.00014	0.00072
46	-0.00002	-0.00016	0.00016	46	0.00070	-0.00014	0.00072
47	-0.00006	-0.00027	0.00027	47	0.00070	-0.00014	0.00072
48	-0.00008	-0.00032	0.00033	48	0.00068	-0.00019	0.00071
49	-0.00016	-0.00039	0.00042	49	0.00068	-0.00019	0.00071
50	-0.00029	-0.00042	0.00051	50	0.00055	-0.00022	0.00060
51	-0.00038	-0.00049	0.00062	51	0.00053	-0.00028	0.00060





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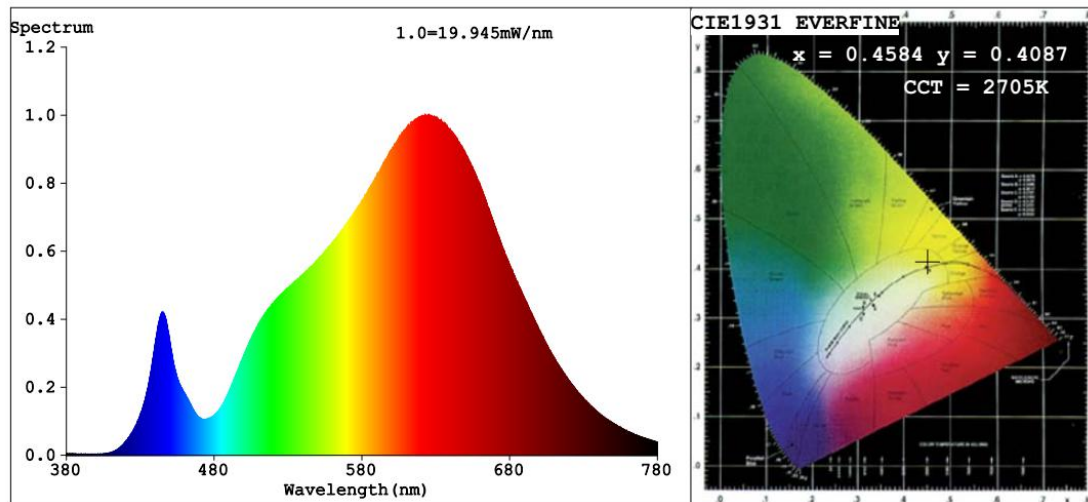
Certificate #4703.03

C180				C270			
gamma	Au'	Av'	Au'v'	gamma	Au'	Av'	Au'v'
0	0.00025	0.00025	0.00035	0	0.00017	0.00003	0.00017
1	0.00021	0.00029	0.00035	1	0.00017	0.00003	0.00017
2	0.00021	0.00029	0.00035	2	0.00017	0.00003	0.00017
3	0.00021	0.00029	0.00035	3	0.00017	0.00003	0.00017
4	0.00021	0.00029	0.00035	4	0.00017	0.00003	0.00017
5	0.00027	0.00030	0.00040	5	0.00017	0.00003	0.00017
6	0.00022	0.00034	0.00041	6	0.00019	0.00009	0.00021
7	0.00016	0.00032	0.00036	7	0.00013	0.00007	0.00015
8	0.00016	0.00032	0.00036	8	0.00017	0.00003	0.00017
9	0.00016	0.00032	0.00036	9	0.00019	0.00009	0.00021
10	0.00016	0.00032	0.00036	10	0.00013	0.00007	0.00015
11	0.00011	0.00036	0.00038	11	0.00013	0.00007	0.00015
12	0.00018	0.00038	0.00042	12	0.00019	0.00009	0.00021
13	0.00013	0.00042	0.00044	13	0.00013	0.00007	0.00015
14	0.00018	0.00038	0.00042	14	0.00013	0.00007	0.00015
15	0.00013	0.00042	0.00044	15	0.00008	0.00011	0.00014
16	0.00007	0.00040	0.00041	16	0.00008	0.00011	0.00014
17	0.00007	0.00040	0.00041	17	0.00008	0.00011	0.00014
18	0.00013	0.00042	0.00044	18	0.00008	0.00011	0.00014
19	0.00009	0.00046	0.00046	19	0.00008	0.00011	0.00014
20	0.00009	0.00046	0.00046	20	0.00002	0.00009	0.00010
21	-0.00002	0.00048	0.00048	21	0.00002	0.00009	0.00010
22	0.00009	0.00046	0.00046	22	0.00002	0.00009	0.00010
23	0.00004	0.00049	0.00050	23	0.00002	0.00009	0.00010
24	-0.00002	0.00048	0.00048	24	-0.00005	0.00008	0.00009
25	0.00004	0.00049	0.00050	25	-0.00005	0.00008	0.00009
26	-0.00002	0.00048	0.00048	26	-0.00007	0.00003	0.00007
27	-0.00009	0.00046	0.00047	27	0.00000	0.00004	0.00004
28	-0.00009	0.00046	0.00047	28	-0.00007	0.00003	0.00007
29	-0.00002	0.00048	0.00048	29	-0.00013	0.00001	0.00013
30	-0.00007	0.00052	0.00052	30	-0.00013	0.00001	0.00013
31	-0.00004	0.00043	0.00043	31	-0.00013	0.00001	0.00013
32	-0.00013	0.00050	0.00052	32	-0.00020	0.00000	0.00020
33	-0.00015	0.00045	0.00047	33	-0.00015	-0.00004	0.00016
34	-0.00004	0.00043	0.00043	34	-0.00022	-0.00006	0.00023
35	-0.00015	0.00045	0.00047	35	-0.00024	-0.00011	0.00026
36	-0.00017	0.00040	0.00043	36	-0.00019	-0.00015	0.00024
37	-0.00017	0.00040	0.00043	37	-0.00032	-0.00018	0.00037
38	-0.00024	0.00038	0.00045	38	-0.00034	-0.00023	0.00042
39	-0.00024	0.00038	0.00045	39	-0.00039	-0.00020	0.00043
40	-0.00030	0.00037	0.00047	40	-0.00041	-0.00025	0.00048
41	-0.00038	0.00030	0.00049	41	-0.00043	-0.00030	0.00052
42	-0.00034	0.00026	0.00043	42	-0.00056	-0.00033	0.00065
43	-0.00047	0.00023	0.00052	43	-0.00058	-0.00039	0.00070
44	-0.00053	0.00021	0.00057	44	-0.00075	-0.00038	0.00084
45	-0.00062	0.00014	0.00064	45	-0.00079	-0.00049	0.00093
46	-0.00075	0.00011	0.00076	46	-0.00086	-0.00050	0.00099
47	-0.00083	0.00005	0.00083	47	-0.00094	-0.00057	0.00110
48	-0.00096	0.00001	0.00096	48	-0.00107	-0.00060	0.00123
49	-0.00105	-0.00005	0.00105	49	-0.00109	-0.00065	0.00127
50	-0.00118	-0.00008	0.00118	50	-0.00118	-0.00072	0.00138
51	-0.00126	-0.00015	0.00127	51	-0.00135	-0.00071	0.00153



<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>	2021-04-09		<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-G1	Input: 120.0V / 60Hz	Light outout(Lumen)	993.7	49.32
		Percentage	93.77%	4.96%



**Color Parameters:**

Chromaticity Coordinate: x=0.4584 y=0.4087/u'=0.2624 v'=0.5264  
CCT=2705K(Duv=-0.0006) Dominant WL:Ld =584.4nm WL:Lc = --nm Purity=60.3%  
Ratio:R=26.2% G=71.8% B=2.0% Peak WL:Lp=625.0nm FWHM=153.5nm  
Render Index:Ra=91.2 AvgR=88.4 TM30:Rf=88 Rg=102

R1 =92 R2 =94 R3 =95 R4 =92 R5 =91 R6 =93 R7 =92  
R8 =82 R9 =58 R10=85 R11=94 R12=83 R13=92 R14=96 R15=88

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

<b>Dimmer Technology</b>	<b>Peak Noise Reading (dBA)</b>	<b>Test Condition</b>	<b>Distance between the microphone and the UUT</b>
LUTRON MACL-153M	13.9	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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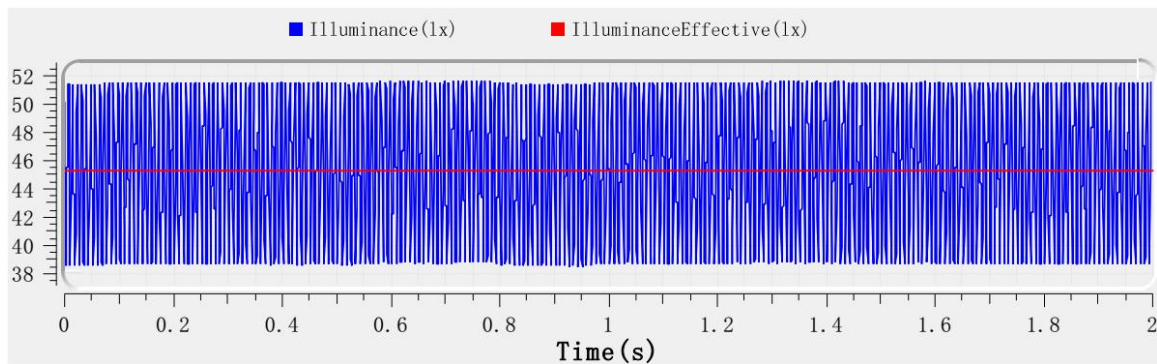
<b>Dimming Technology</b>	Forward phase-cut
<b>Dimmer</b>	LUTRON MACL-153M

Item	Short Term Flicker Indicator (Pst)	Stroboscopic Visibility Measure (SVM)
<b>Maximum conduction</b>	0.045	0.565
<b>Intermediate conduction</b>	0.140	0.848
<b>Minimum conduction</b>	0.611	0.444



<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>	2021-04-09	<b>Test Ambient:</b>	25±1° C
<b>Sample No.</b>	<b>Operating Frequency (Hz)</b>		
JCE210313-DL-G1	120.023		

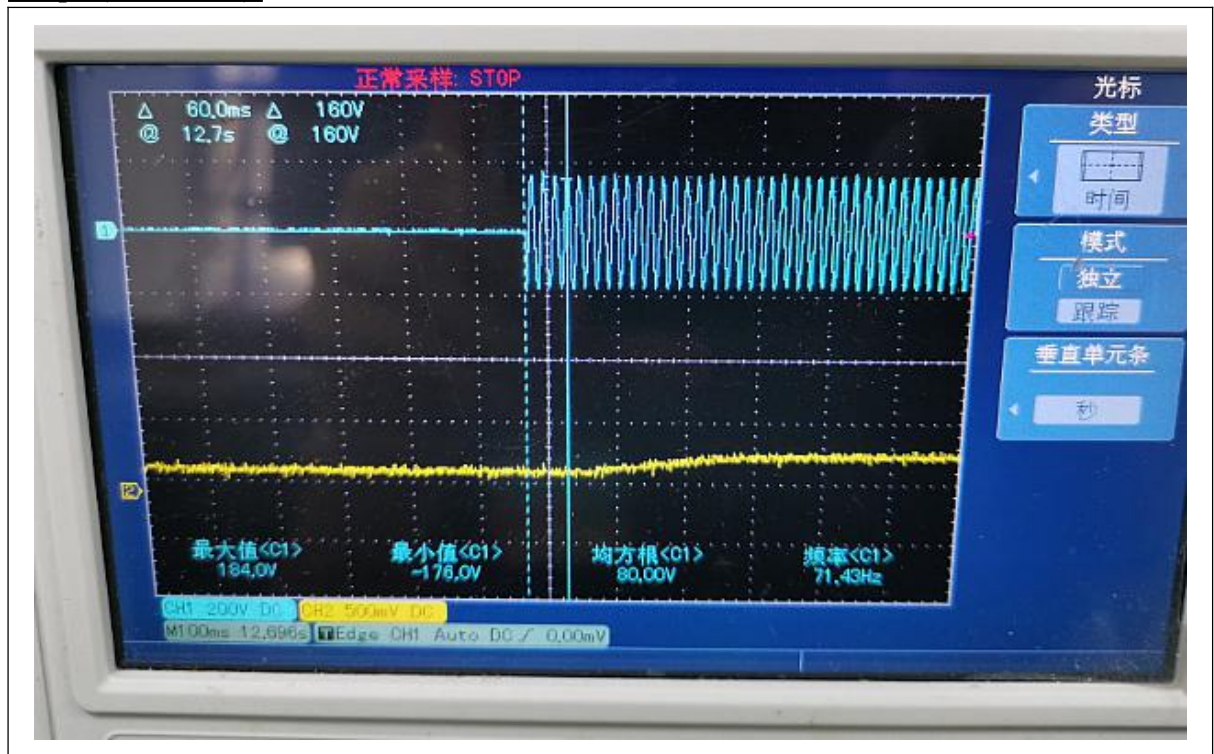




<b>2.7 Starting Time</b>	<b>ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2</b>
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Test date	2021-04-09	Test Ambient:	25±1° C
Sample No.	Start Time (ms)		
JCE210313-DL-G1	60.0		

**Graph (Start Time):**





<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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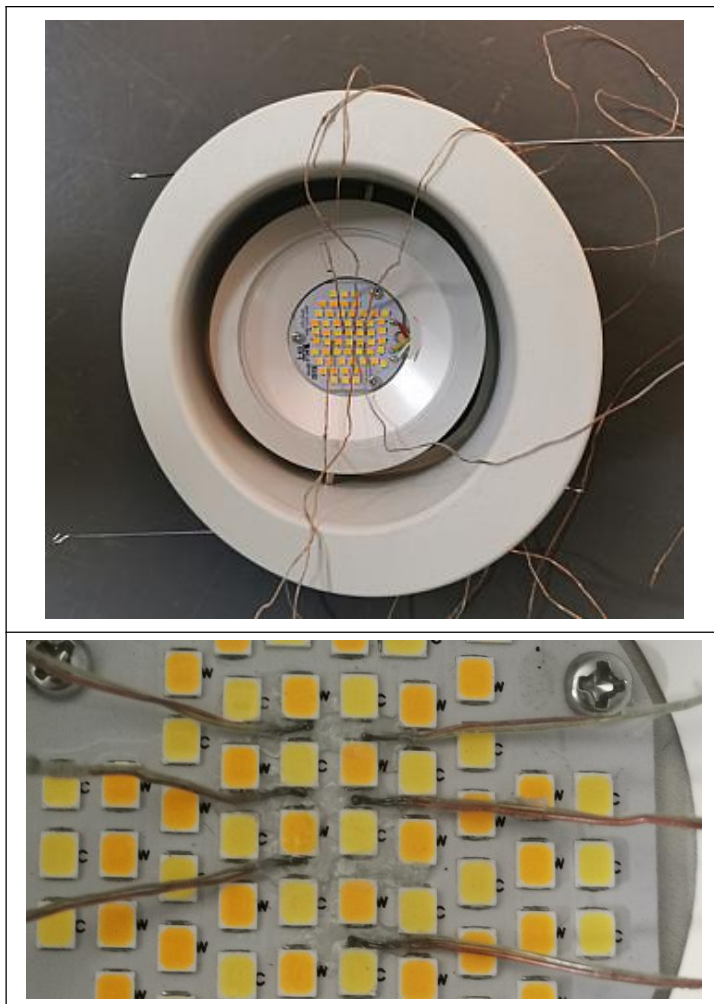
**Test voltage: 120V,60Hz**

<b>Test date</b>	2021-04-09	<b>Test Ambient</b>	25±1° C
<b>Sample No.</b>		<b>Transient Protection Test - Seven Strikes</b>	
JCE210313-DL-G1		Survival	

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

Test date	2021-04-09	Test Ambient	25±5° C
Input Vol./Frequency	120.0V / 60Hz	Output Current of Single LED(mA)	149.2
Sample No.	LED Package Model	Maximum Measured LED Ts Point Temperature (°C)	Maximum permitted Ts temperature for L70 ≥ 50,000 hrs (°C)
JCE210313-DL-G1	67-21S Series	97.3	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>
-----------------------------------------------------------------	--------------------------------------------

<b>Test date</b>	2021-04-09	<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-G1	101.3		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>
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<b>Test date</b>	2021-04-09	<b>Test Ambient:</b>	25±1° C
<b>Model Number</b>	SLKT600/603-5CCT(2700K)	<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-G1	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	2021-04-09	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	2021-04-09	2022-04-06
ST-R-S-027	Digital Luxmeter	2021-04-08	2022-04-07
ST-R-S-016	Oscillograph	2021-04-09	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 \*\*\*\*\*