Ningbo TengLi Testing Co., Ltd

2nd floor, Block B, Ningbo Testing and Certification Base, No. 66
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ACCREDITED
Certificate#4703.02

Energy Star Test Report

For

LEDVANCE LLC

(Brand Name: SYLVANIA)

200 BALLARDVALE STREET WILMINGTON, MA 01887

Model name(s): LEDRT4G650SC3

Report Type:	Testing and Report According toENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2
Type of Luminaire:	Directional downlights
Report Date:	2021-11-15
Prepared By:	Ningbo TengLi Testing Co., Ltd 2nd floor, Block B, Ningbo Testing and Certification Base, No. 66 Qingyi Road, Ningbo National Hi-Tech Zone, Ningbo, Zhejiang

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Test & Report By:	Review By:
Engineer: Nick Song	Manager: Garman Mo

Note: 1. The results contained in this report pertain only to the tested samples.

2. This report does not imply product certification, approval, or endorsement by A2LA, or any agency of the Federal Government.

3. This report contains data that are not covered by the A2LA accreditation.

1.1 Product Information:		
Model Number	LEDRT4G650SC3	
Remark	The defult CCT setting is 2700K The most consumptive CCT setting is4000K. The most ineffective CCT setting is 2700K.	
Representative (Tested) Model	LEDRT4G650SC3	
Model Difference	N/A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Directional downlights	
Mounting Type	Recessed	
Indoor/Outdoor	Indoor	
LED Manufacturer	Bridgelux,Inc.	
LED Model	BXFN-XXG-13H-98	
Dimming	Dimmable	
Dimming range	10%-100%	
Sample Number	STD210933NB-B1	
Date of Receipt	Nov.03,2021	
Luminaire Aperture (for Downlight retrofits)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

1.2 Rated Values:	
Rated Voltage/ Frequency	120Vac,60 Hz
Nominal Power	9W
Rated Initial Lamp Lumen	--
Declared CCT	2700K/3000K/3500K/4000K/5000K (Color tunable)

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1.3 Product Photos

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1.4 Test Specifications:

Test item	1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSIC78.377-2015 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring andSpecifying Colour RenderingProperties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA Technical Memorandum on Light Emitting Diode (LED) Sources and Systems 7. ANSI/UL 1598:2008,Luminaire 8. IEC 62301:2011 Household Electrical Appliances – Measurement of Standby Power 9. NEMA 77-2017 Standard for Temporal Light Artifacts: Test Methods and Guidance for Acceptance Criteria
Remark	Below test and data are not covered by A2LA accreditation: - Operating Frequency - Flicker - Noise

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1.5 Test Methods

1) Photometric and Light Distribution Measurement – Goniophotometer Method: Photometricparameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at 25° C ± 1° 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 120or 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: Chromaticityparameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25º C ± 1º 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 120or 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 goniophotometeror sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25º C ± 1º C. The sample was operated at 120or 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.

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2.1Summary of Test Result

Criteria Item	The Type of Luminaires	Requirement (ES for Luminaires V2.2)	MeasuredValue	Status
Input Wattage	All	≤ Rated Wattage	8.642W	Pass
Luminous Efficacy	Downlights	≥ 55 lm/W	81.69lm/W	Pass
Luminaire Minimum Light Output	Downlights	≤4.5" aperture: 345 lumens > 4.5" aperture: 575 lumens	705.97lm	Pass
Luminaire Zonal Lumen Density Requirement	Downlights	≥75% of total initiallumens within the 0-60° zone	94.1	Pass
Correlated Color Temperature(CCT)	Solid State	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	2772K Duv=0.0013	Pass
Color Rendering Index (CRI)	Solid State	Ra ≥ 80R9 >0	Ra =95.0 R9 =77	Pass
Color Angular Uniform	Directional Solid State Indoor Luminaires	The variation of chromaticity shall be within 0.006 from the weighted average point on the CIE 1976(u',v') diagram	0.0019	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	50,000 86.24% >72000	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	50,000 86.24% >72000	Pass

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Color Maintenance	Solid State Indoor Luminaires	Δu'v' ≤ 0.007	Max.0.0036 in LM-80 report*	Pass
Source Start Time	Solid State	<750 ms	328ms	Pass
Power Factor	Solid State	Total luminaire input power ≤ 5 watts: PF ≥ 0.5 Total luminaire input power > 5 watts: PF ≥ 0.7	0.9688	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	120.0Hz	Pass
Maximum Measured Driver Case Temperature	Solid State	shall not exceed the driver manufacturer's maximum recommended temperature during in situ operation. ≤ 105 °C	66.6°C	Pass
Maximum In-Situ Source Temperature	Solid State	Maximum permitted Ts temperature for L70≥50,000 hrs ≤105°C	86.1°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 noise above 24dBA at 1 meter or less at the minimum output.	Validated	Pass

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Warranty Requirements	Solid State	incorporating replaceable drivers: ≥3 years incorporating non-replaceable drivers: ≥5 years	5 years	Pass
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 "*".

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

Test date	2021-11-04	Test Ambient:	25±1 ° C
Test Orientation	As intended	Stabilization Time (min)	45
Model Number	LEDRT4G650SC3 /2700K setting	Total Operating Time(min)	55

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz	Current (A)	Power (W)	Power Factor
STD210933 NB-B1	119.9	60.01	0.0744	8.642	0.9688

Sphere-Spectroradiometer Method: (Self-absorption: 1.0274) (4π geometry):

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	95.0
R9	77
CCT (K)	2722
Duv	0.0013

Goniophotometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	705.97
Luminous Efficacy (lm/W)	81.69
Beam Angle°	47.4
Center Beam Candle Power (cd)	826

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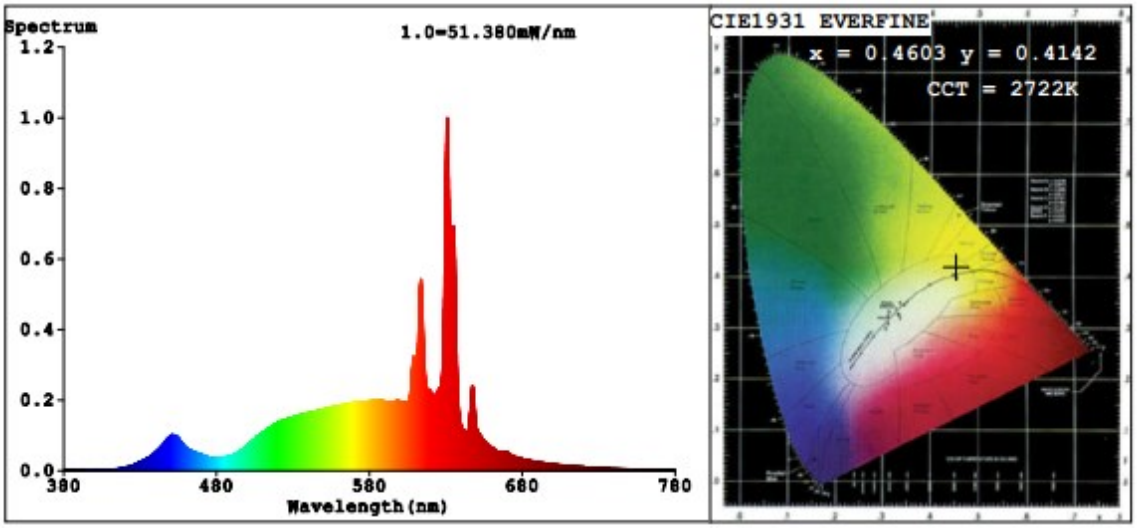
Spectral Power Distribution and Chromaticity Diagram



Colorimetric Parameters

Chromaticity Coordinate:x=0.4603 y=0.4142/u'=0.2612 v'=0.5288
CCT=2722K(Duv=0.0013) Dominant WL:Ld =583.7nm WL:Lc = --nm Purity=62.5%
Ratio:R=27.4% G=70.7% B=1.9% Peak WL:Lp=631.0nm FWHM=7.4nm
Render Index:Ra=95.0 AvgR=92.2 TM30:Rf=91 Rg=103

R1 =99	R2 =96	R3 =89	R4 =95	R5 =97	R6 =96	R7 =96	
R8 =92	R9 =77	R10=86	R11=94	R12=81	R13=98	R14=92	R15=95

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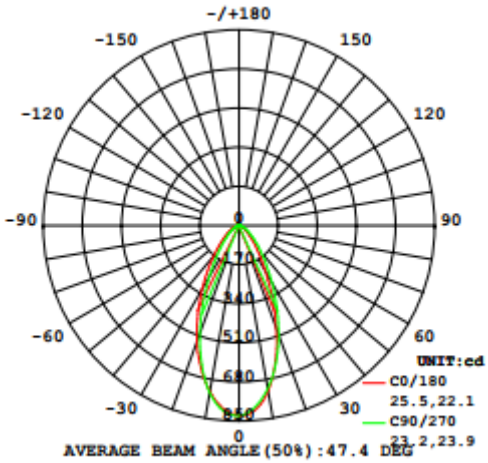
Zonal Lumen Tabulation



Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	420.7	59.6%
0-40	544.3	77.1%
0-60	664.1	94.1%
60-90	41.6	5.9%
70-100	16.3	2.3%
90-120	0	0%
0-90	705.8	100%
90-180	0.0	0%
0-180	705.8	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	74.1	10.5%	90-100	0	0%
10-20	172.6	24.5%	100-110	0	0%
20-30	174.0	24.7%	110-120	0	0%
30-40	123.6	17.5%	120-130	0	0%
40-50	75.7	10.7%	130-140	0.0	0%
50-60	44.2	6.3%	140-150	0	0%
60-70	25.3	3.6%	150-160	0	0%
70-80	12.9	1.8%	160-170	0	0%
80-90	3.4	0.5%	170-180	0	0%

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Table--1 UNIT: cd

γ (DEG) \ C (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5		
0	826	826	826	826	826	826	826	826	826	826	826	826	826	826	826	826		
5	805	802	797	793	792	793	794	795	798	799	801	803	807	809	809	809		
10	729	727	720	716	720	724	725	727	732	732	730	731	737	740	738	734		
15	612	614	608	613	620	629	631	633	641	639	632	625	626	628	621	615		
20	473	480	483	494	505	521	525	526	536	531	516	503	498	491	478	473		
25	338	348	361	374	389	411	414	416	424	419	397	382	369	358	341	338		
30	230	241	259	270	288	312	315	316	323	318	293	276	261	247	232	231		
35	155	164	180	189	207	234	231	230	238	238	211	195	182	168	156	156		
40	105	113	123	131	148	173	164	162	170	178	149	135	125	114	106	106		
45	72.2	78.5	84.9	91.2	105	125	117	115	121	130	106	92.8	85.9	78.6	71.6	70.3		
50	50.1	55.6	60.1	64.2	74.2	88.4	83.8	83.3	86.8	92.4	74.1	65.0	60.5	55.2	49.2	47.6		
55	35.1	39.6	43.3	45.8	52.5	63.3	60.5	60.1	62.7	65.9	52.6	46.3	43.6	39.4	34.5	33.1		
60	25.3	28.8	31.6	32.6	37.1	45.7	43.4	43.0	45.1	47.4	37.6	33.3	31.9	28.5	25.0	23.9		
65	18.6	21.0	23.2	23.4	26.3	32.3	30.7	30.1	32.2	33.9	26.9	24.2	23.4	20.8	18.6	17.8		
70	13.5	15.1	16.7	16.7	18.5	22.4	21.4	20.9	22.5	23.7	19.0	17.4	16.9	15.0	13.6	13.1		
75	9.04	10.1	11.2	11.3	12.4	14.8	14.3	14.1	15.1	15.7	12.9	11.9	11.5	10.2	9.12	8.74		
80	5.30	5.90	6.57	6.69	7.29	8.52	8.42	8.47	9.09	9.34	7.91	7.32	6.99	6.04	5.36	5.14		
85	2.11	2.31	2.49	2.66	2.89	3.17	3.57	3.69	3.75	3.85	3.43	3.16	2.93	2.56	2.24	2.12		
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

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

Test date	2021-11-04	Test Ambient:	25±1 ° C
Test Orientation	As intended	Stabilization Time (min)	45
Model Number	LEDRT4G650SC3 /3000K setting	Total Operating Time(min)	55

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz	Current (A)	Power (W)	Power Factor
STD210933 NB-B1	120.06	60	0.0743	8.657	0.9711

Sphere-Spectroradiometer Method: (Self-absorption: 1.0274) (4π geometry):

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	95.8
R9	84
CCT (K)	3005
Duv	-0.0006
Total Luminous (lm)	712.5
Luminous Efficacy (lm/W)	82.30

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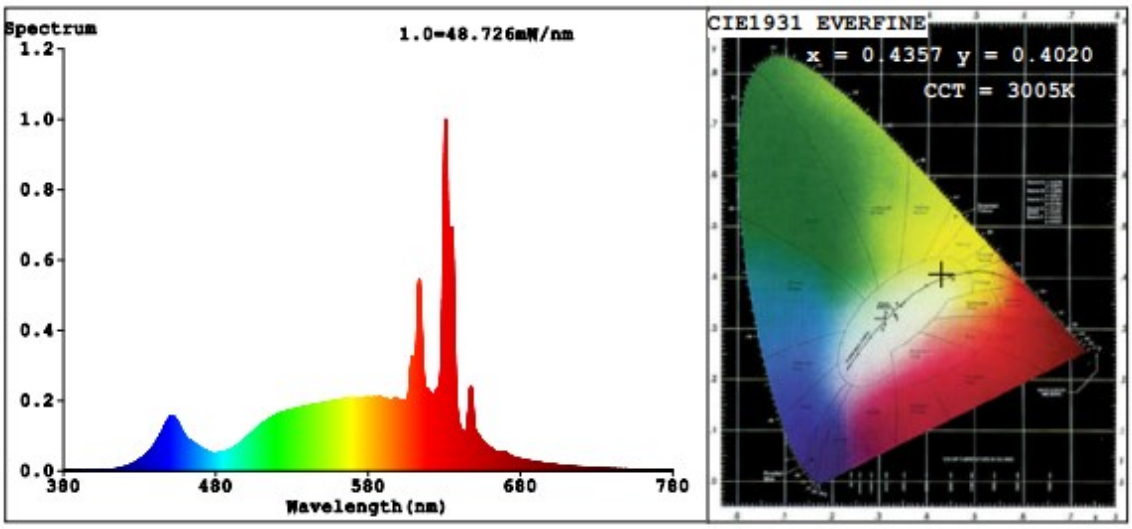

Colorimetric Parameters

Chromaticity Coordinate:x=0.4357 y=0.4020/u'=0.2506 v'=0.5204
CCT=3005K(Duv=-0.0006) Dominant WL:Ld =583.0nm WL:Lc = --nm Purity=51.4%
Ratio:R=25.7% G=71.9% B=2.4% Peak WL:Lp=631.0nm FWHM=7.4nm
Render Index:Ra=95.8 AvgR=93.6 TM30:Rf=91 Rg=104

R1 =99	R2 =97	R3 =90	R4 =95	R5 =98	R6 =96	R7 =96	
R8 =95	R9 =84	R10=88	R11=93	R12=82	R13=99	R14=92	R15=98

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

Test date	2021-11-04	Test Ambient:	25±1 ° C
Test Orientation	As intended	Stabilization Time (min)	45
Model Number	LEDRT4G650SC3 /3500K setting	Total Operating Time(min)	55

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz	Current (A)	Power (W)	Power Factor
STD210933 NB-B1	120.11	60	0.0745	8.649	0.97671

Sphere-Spectroradiometer Method: (Self-absorption: 1.0274) (4π geometry):

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	95.8
R9	88
CCT (K)	3456
Duv	-0.0004
Total Luminous (lm)	722.5
Luminous Efficacy (lm/W)	83.54

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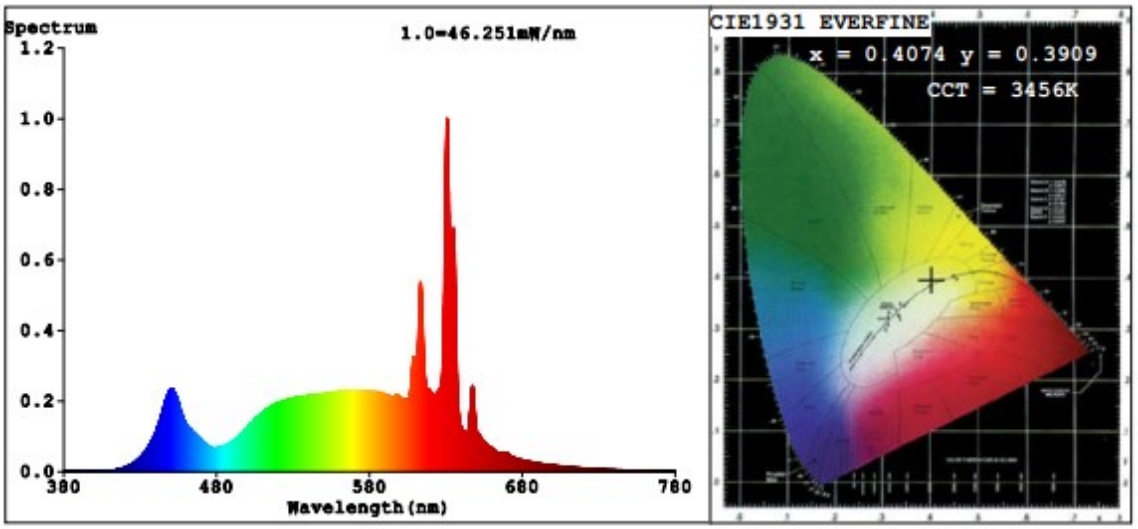

Colorimetric Parameters

Chromaticity Coordinate:x=0.4074 y=0.3909/u'=0.2370 v'=0.5117
CCT=3456K(Duv=-0.0004) Dominant WL:Ld =581.2nm WL:Lc = --nm Purity=39.6%
Ratio:R=23.1% G=73.9% B=3.0% Peak WL:Lp=630.8nm FWHM=7.4nm
Render Index:Ra=95.8 AvgR=93.6 TM30:Rf=92 Rg=103

R1 =100	R2 =96	R3 =90	R4 =94	R5 =98	R6 =95	R7 =96	
R8 =97	R9 =88	R10=88	R11=93	R12=78	R13=99	R14=93	R15=99

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

Test date	2021-11-04	Test Ambient:	25±1 ° C
Test Orientation	As intended	Stabilization Time (min)	45
Model Number	LEDRT4G650SC3 /4000K setting	Total Operating Time(min)	55

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz	Current (A)	Power (W)	Power Factor
STD210933 NB-B1	120.07	60	0.7452	8.665	0.9684

Sphere-Spectroradiometer Method: (Self-absorption: 1.0274) (4π geometry):

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	95.1
R9	87
CCT (K)	3975
Duv	0.0008
Total Luminous (lm)	724.7
Luminous Efficacy (lm/W)	83.64

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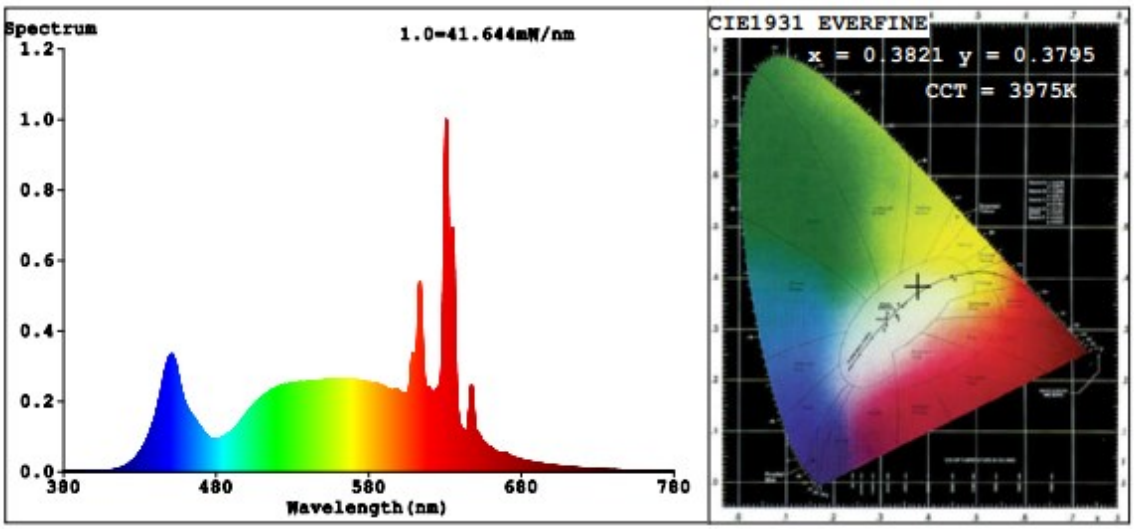
Certificate#4703.02

Spectral Power Distribution and Chromaticity Diagram



Colorimetric Parameters

Chromaticity Coordinate:x=0.3821 y=0.3795/u'=0.2251 v'=0.5030
CCT=3975K(Duv=0.0008) Dominant WL:Ld =578.8nm WL:Lc = --nm Purity=28.6%
Ratio:R=20.8% G=75.6% B=3.6% Peak WL:Lp=630.8nm FWHM=7.4nm
Render Index:Ra=95.1 AvgR=92.5 TM30:Rf=93 Rg=102

R1 =98	R2 =95	R3 =90	R4 =95	R5 =96	R6 =93	R7 =96	
R8 =97	R9 =87	R10=86	R11=94	R12=74	R13=97	R14=93	R15=97

QT

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

Test date	2021-11-04	Test Ambient:	25±1 ° C
Test Orientation	As intended	Stabilization Time (min)	45
Model Number	LEDRT4G650SC3 /5000K setting	Total Operating Time(min)	55

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz	Current (A)	Power (W)	Power Factor
STD210933 NB-B1	120.08	60	0.0745	8.635	0.9656

Sphere-Spectroradiometer Method: (Self-absorption: 1.0274) (4π geometry):

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Color Rendering Index (CRI)	92.0
R9	70
CCT (K)	5001
Duv	0.0046
Total Luminous (lm)	713.1
Luminous Efficacy (lm/W)	82.58

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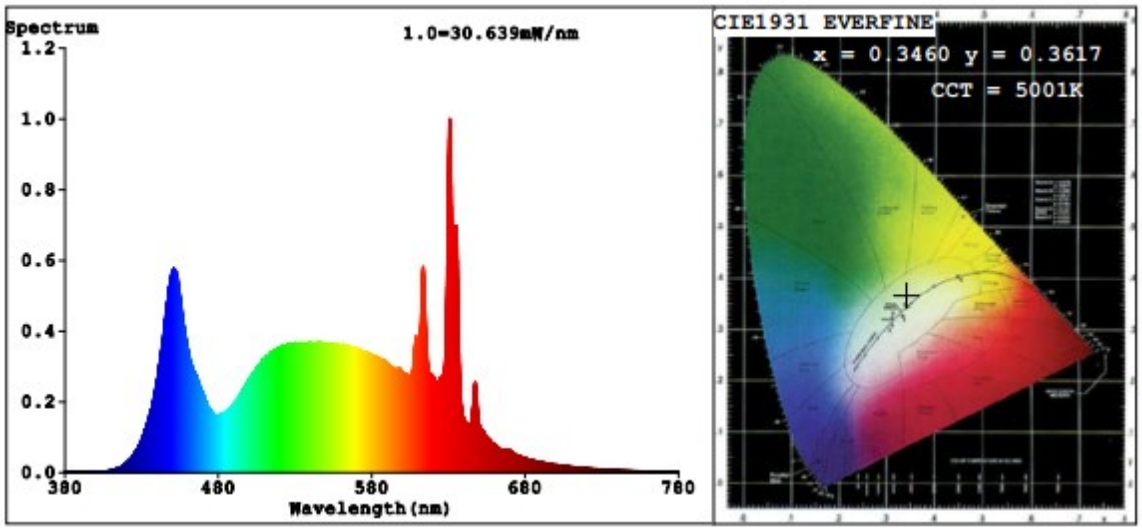
Spectral Power Distribution and Chromaticity Diagram



Colorimetric Parameters

Chromaticity Coordinate:x=0.3460 y=0.3617/u'=0.2081 v'=0.4896
CCT=5001K(Duv=0.0046) Dominant WL:Ld =568.8nm WL:Lc = --nm Purity=12.3%
Ratio:R=17.3% G=78.0% B=4.6% Peak WL:Lp=631.0nm FWHM=7.6nm
Render Index:Ra=92.0 AvgR=88.5 TM30:Rf=91 Rg=100

R1 =93	R2 =92	R3 =90	R4 =93	R5 =92	R6 =90	R7 =95	
R8 =91	R9 =70	R10=80	R11=93	R12=71	R13=92	R14=94	R15=92

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

Test Data:

Test date	2021-11-04	Test Ambient	25±1 ° C
Sample No.		Maximum Δu'v'	
STD210933NB-B1		0.0019	

Gamma\C	CIE u'	CIE v'	du'v'	CIE u'	CIE v'	du'v'
-24	0.2564	0.5289	0.0017	0.2563	0.5287	0.0019
-23	0.2564	0.529	0.0016	0.2563	0.5288	0.0018
-22	0.2565	0.529	0.0016	0.2564	0.5289	0.0017
-21	0.2565	0.5291	0.0015	0.2564	0.5289	0.0017
-20	0.2565	0.5291	0.0015	0.2564	0.529	0.0016
-19	0.2565	0.5291	0.0015	0.2564	0.5292	0.0014
-18	0.2565	0.5292	0.0014	0.2564	0.5292	0.0014
-17	0.2566	0.5292	0.0014	0.2564	0.5293	0.0013
-16	0.2566	0.5293	0.0013	0.2565	0.5294	0.0012
-15	0.2566	0.5294	0.0012	0.2565	0.5294	0.0012
-14	0.2566	0.5295	0.0011	0.2565	0.5295	0.0011
-13	0.2566	0.5295	0.0011	0.2566	0.5296	0.001
-12	0.2566	0.5296	0.001	0.2566	0.5297	0.0009
-11	0.2566	0.5297	0.0009	0.2565	0.5297	0.0009
-10	0.2566	0.5297	0.0009	0.2567	0.5298	0.0008
-9	0.2566	0.5298	0.0008	0.2566	0.5299	0.0007
-8	0.2566	0.5299	0.0007	0.2567	0.53	0.0006
-7	0.2566	0.5299	0.0007	0.2568	0.53	0.0006
-6	0.2566	0.53	0.0006	0.2568	0.5301	0.0005
-5	0.2566	0.5301	0.0005	0.2568	0.5302	0.0004
-4	0.2566	0.5302	0.0004	0.2569	0.5302	0.0004
-3	0.2567	0.5303	0.0003	0.2568	0.5303	0.0003
-2	0.2566	0.5303	0.0003	0.2568	0.5304	0.0002
-1	0.2567	0.5304	0.0002	0.2568	0.5305	0.0001
0	0.2567	0.5306	0	0.2567	0.5306	0
1	0.2567	0.5306	0	0.2569	0.5306	0.0002
2	0.2568	0.5306	0.0001	0.2569	0.5307	0.0002
3	0.2568	0.5307	0.0001	0.2569	0.5307	0.0002
4	0.2568	0.5307	0.0001	0.2569	0.5308	0.0003

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5	0.2569	0.5308	0.0003	0.2569	0.5309	0.0004
6	0.2568	0.5308	0.0002	0.2569	0.5308	0.0003
7	0.2568	0.5308	0.0002	0.2568	0.5309	0.0003
8	0.2568	0.5309	0.0003	0.2568	0.5309	0.0003
9	0.2568	0.5309	0.0003	0.2568	0.5309	0.0003
10	0.2568	0.5309	0.0003	0.2568	0.5309	0.0003
11	0.2568	0.5309	0.0003	0.2568	0.5309	0.0003
12	0.2568	0.5309	0.0003	0.2568	0.5309	0.0003
13	0.2568	0.531	0.0004	0.2568	0.5309	0.0003
14	0.2568	0.5309	0.0003	0.2568	0.5309	0.0003
15	0.2568	0.531	0.0004	0.2568	0.5309	0.0003
16	0.2568	0.531	0.0004	0.2568	0.5309	0.0003
17	0.2568	0.5309	0.0003	0.2568	0.5309	0.0003
18	0.2568	0.5309	0.0003	0.2569	0.5308	0.0003
19	0.2569	0.5309	0.0004	0.2568	0.5308	0.0002
20	0.2569	0.5308	0.0003	0.2569	0.5307	0.0002
21	0.2569	0.5308	0.0003	0.2568	0.5307	0.0001
22	0.2569	0.5308	0.0003	0.2569	0.5306	0.0002
23	0.2569	0.5307	0.0002	0.2569	0.5306	0.0002
24	0.2569	0.5306	0.0002	0.2569	0.5305	0.0002

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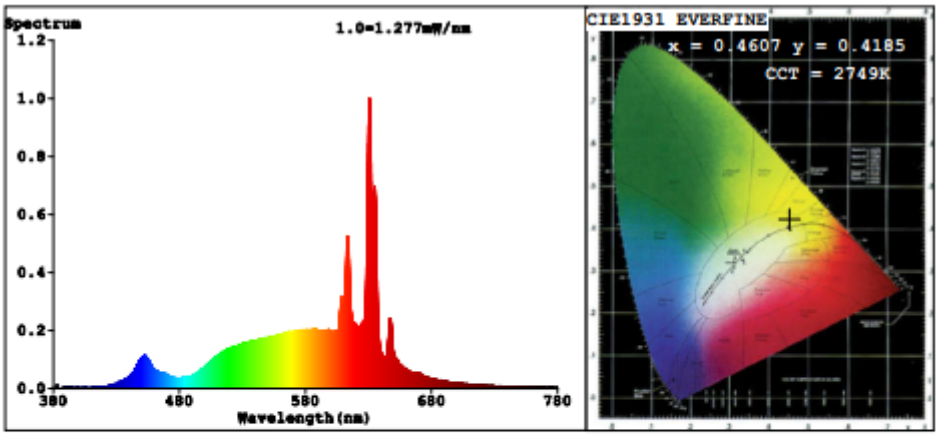
2.4 Electrical and Photometric Measurements, with dimming	IES LM-79 2008 ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2

Test date	2021-11-04		Test Ambient:	25±1 ° C
Dimmer Technology			Forward phase-cut	
Sample No.			Maximum Level	Minimum Level
STD210933NB-B1	Input: 120.0 V / 60 Hz	Light outout (Lumen)	700.2	16.86
		Percentage	99.18%	2.41%



Color Parameters:

Chromaticity Coordinate:x=0.4607 y=0.4185/u'=0.2595 v'=0.5305
CCT=2749K(Duv=0.0028) Dominant WL:Ld =583.1nm WL:Lc = --nm Purity=63.9%
Ratio:R=26.9% G=71.2% B=1.8% Peak WL:Lp=630.7nm FWHM=7.4nm
Render Index:Ra=94.4 AvgR=91.1 TM30:Rf=92 Rg=101

R1 =97	R2 =95	R3 =90	R4 =97	R5 =95	R6 =95	R7 =96	
R8 =91	R9 =72	R10=84	R11=96	R12=77	R13=96	R14=92	R15=93

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

Dimmer	Peak Noise Reading (dBA)	Test Condition	Distance between the microphone and the UUT
LEVITON MFG CO INC (E31373), Cat. No. 6681	16.1	Dimmer adjusted to lowest light output	< 1 m

2.5Flicker	NEMA 77-2017 ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2
Noted: This test and data are not covered by A2LA accreditation	

Dimming Technology	phase-cut
Dimmer	LEVITON MFG CO INC (E31373), Cat. No. 6681

Item	Short Term Flicker Indicator (Pst)	Stroboscopic Visibility Measure (SVM)
Maximum Conduction	0.246	0.425
Intermediate Conduction	1.917	0.512
Minimun Conduction	3.547	0.345

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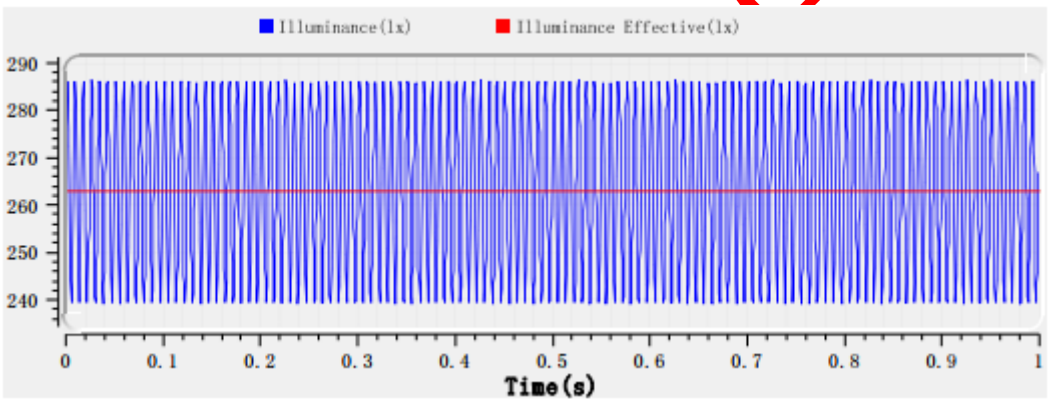
2.6Operating Frequency	ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2
Noted: This test and data are not covered by A2LA accreditation	

Test date	2021-11-04	Test Ambient:	25±1 ° C
Sample No.	Operating Frequency (Hz)		
STD210933NB-B1	120.0		



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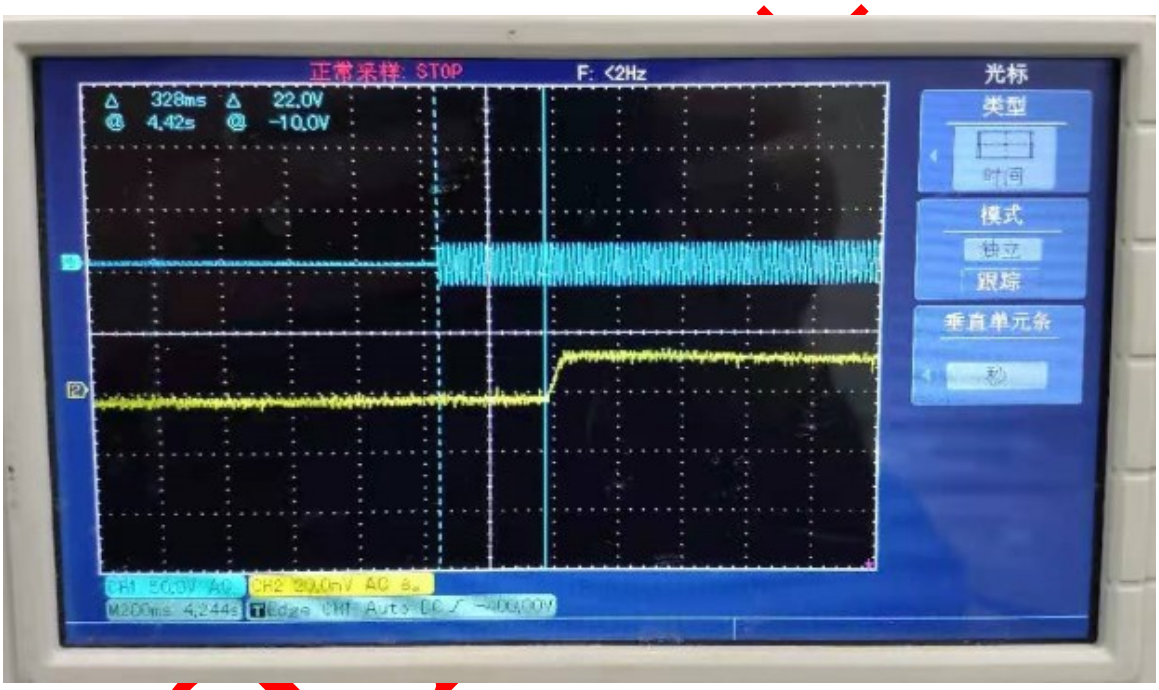
2.7Starting Time	ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2

Test date	2021-11-04	Test Ambient:	25±1 ° C
Sample No.	**Start Time (ms)**		
STD210933NB-B1	328		

Graph (Start Time):



2.8 Transient Protection Test	ANSI/IEEE C62.41 ENERGY STAR® Program Requirements for Luminaires – Version 2.2

Test voltage: 120V,60Hz

Test date	2021-11-04	Test Ambient	25±1 ° C
Sample No.		Transient Protection Test - Seven Strikes	
STD210933NB-B1		Survival	

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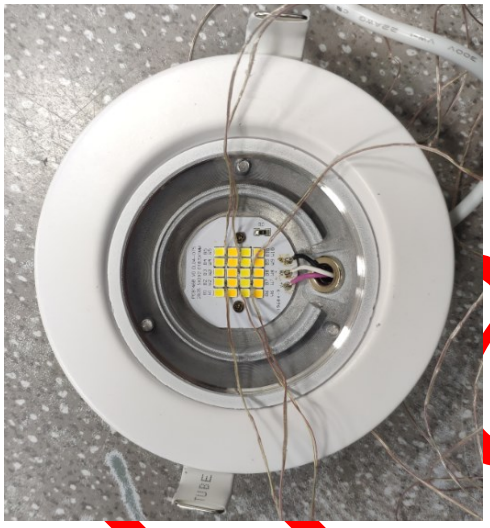
2.9In-Situ Temperature Measurement Test (ISTMT)	UL1598-2008, 3rd Edition

Test date	2021-11-04	Test Ambient	25.1 ° C
Input Vol./Frequency	120 V / 60 Hz	Output Current of Single LED (mA)	80

Sample No.	LED Package Model	Maximum Measured LED Ts Point Temperature (°C)	Maximum permitted Ts temperature for L70≥ 50,000 hrs (°C)
STD210933NB-B1	BXFN-XXG-13H-98	86.1	105

In-Situ Picture - Ts:



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2.10Maximum Measured Ballast or Driver Case Temperature	UL1598-2008, 3rd Edition

Test date	2021-11-04	Test Ambient	25.1 ° C
Sample No.	Maximum Measured Driver Case Temperature (°C)	Maximum Driver Case Temperature Limited (°C)	
STD210933NB-B1	66.6	105	

In-Situ Picture - Ts:

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2.11Off-State Power Consumption:	ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) - Version 2.2

Test date	2021-11-04	Test Ambient:	25±1 ° C
Model Number	LEDRT4G650SC3	Stabilization Time (min)	90

Electrical Measurement – when the luminaires turned off:

Sample No.	Power (W)
STD210933NB-B1	0

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Ningbo TengLi Testing Co., Ltd

2nd floor, Block B, Ningbo Testing and Certification Base, No. 66
Qingyi Road, Ningbo National Hi-Tech Zone, Ningbo, Zhejiang
Tel: 86574-8783 6802
Fax: 86574-87835902

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-702	2 meter Integrating Sphere	Verified by D204 standard lamp	
ST-R-701	Spectral analysis system HAAS-1200	Verified by D204 standard lamp	
ST-R-703	Standard Lamp D204	2021-02-21	2022-02-20
ST-R-704	Power Meter for Integrating Sphere	2021-01-04	2022-01-03
ST-R-714	Goniophotometer system	Verified by D908S standard lamp	
ST-R-710	Standard Lamp D908S	2021-02-21	2022-02-20
ST-R-711	Power Meter for Goniophotometer	2021-01-04	2022-01-03
ST-R-720	Digital Luxmeter	2021-01-04	2022-01-03
ST-R-622	Oscillograph	2021-01-04	2022-01-03
ST-R-721	EMS61000-12C	2021-01-04	2022-01-03
ST-R-725	LFA-3000	2021-01-04	2022-01-03
ST-R-607	Temperature Tester	2021-01-04	2022-01-03

Uncertainty(K=2):
Photometric Measurement (Sphere):3.94%
Chromaticity Measurement(Sphere):48.2K
Photometric Measurement(Goniophotometer):3.96%

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