CEC Title 24 (CEC-400-2015-038-CMF 2016

REFERENCE APPENDICES JA8 and JA10) Test Report

For

L-TECH CORPORTION

(Brand Name: L-TECH CORP)

SHAOGANGTOU DISTRICT.QIAOTOU TOWN.DONGGUAN CITY.GUANGDONG PROVINCE,CHINA

LED Luminaires

Model name(s): ULD6-27

Model Different: N/A

Test & Report By: Review By:

Engineer: Jack Luo Manager: Tommy Liang

Date: May.16,2017

Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

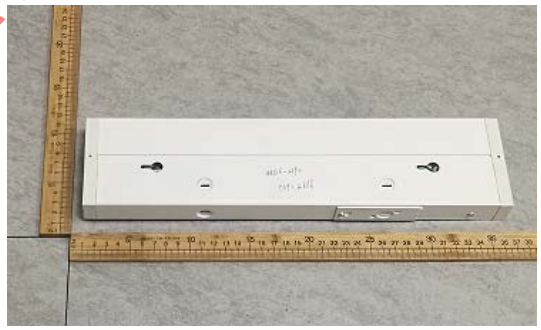
Laboratory Information:

Name of Test Laboratory	Standard-Tech Co. Ltd
Date of Test Report	May.16,2017
Test Report No.	GZE170330-H-C
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	L-TECH CORPORTION	
Brand Name	L-TECH CORP	
Model Number	ULD6-27	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
Rated Voltage / Frequency	120Vac, 60 Hz	
Nominal Power	8.5W	
Rated Initial Lamp Lumen	--	
Declared CCT	2700K	
LED Manufacturer	EVERLIGHT ELECTRONICS CO., LTD	
LED Model	67-21S Series	
Sample Number	GZE170330-H-C1,C4-C12	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Photo



Test Specifications:

Date of Receipt	May.13,2017
Date of Test	May.15,2017
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 8. Start Time 9. In-Situ Temperature 10. Dimming, Reduced Flicker Operation and Audible Noise
Reference Standard	1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems 7. Joint Appendix JA8-2016 8. Joint Appendix JA10-2016 9. ENERGY STAR Program Requirements Product Specifications for Lamps 1.1

Test Methods

1. 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 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 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.

2. 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 25º C ± 1º 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 Electrical, Photometric and Chromaticity Measurements

Test date	2017-05-17	Test Ambient:	25.2 º C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	ULD6-27		

Electrical Measurement:

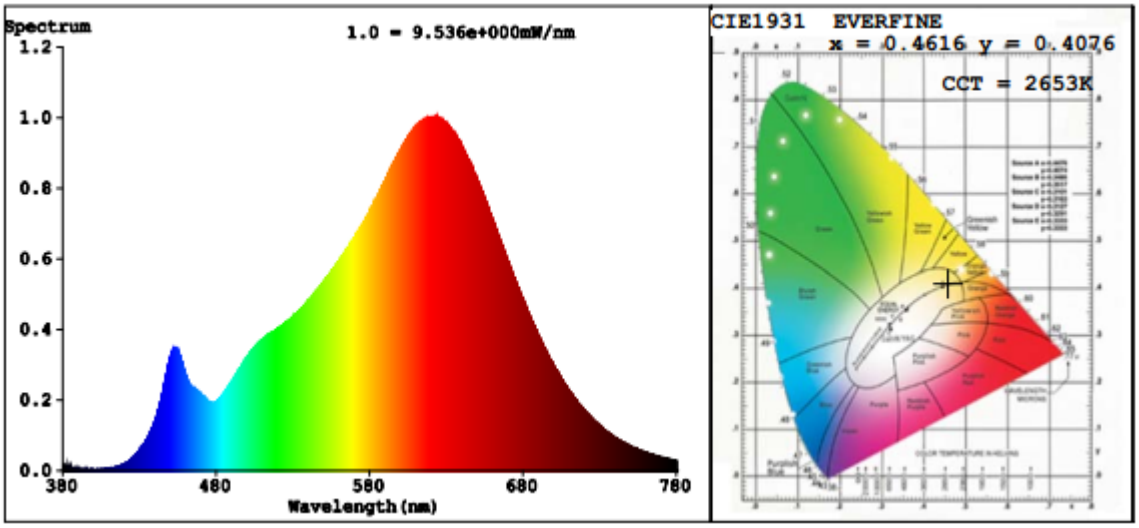
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE170330-H-C1	120.0	60	0.0737	8.790	0.9934

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	2653
Duv	-0.0013
Chromaticity (x, y)	x=0.4616 y=0.4076
Chromaticity (u', v')	u'=0.2650 v'=0.5264
Color Rendering Index (CRI)	92.0
R9	53
Total Luminous (lm)	454.1
Luminous Efficacy (lm/W)	51.66

Special Color Rendering Indices			
R1	93	R9	53
R2	98	R10	95
R3	97	R11	94
R4	92	R12	89
R5	93	R13	94
R6	97	R14	99
R7	89	R15	87
R8	77	--	--

Spectral Power Distribution & Chromaticity Diagram



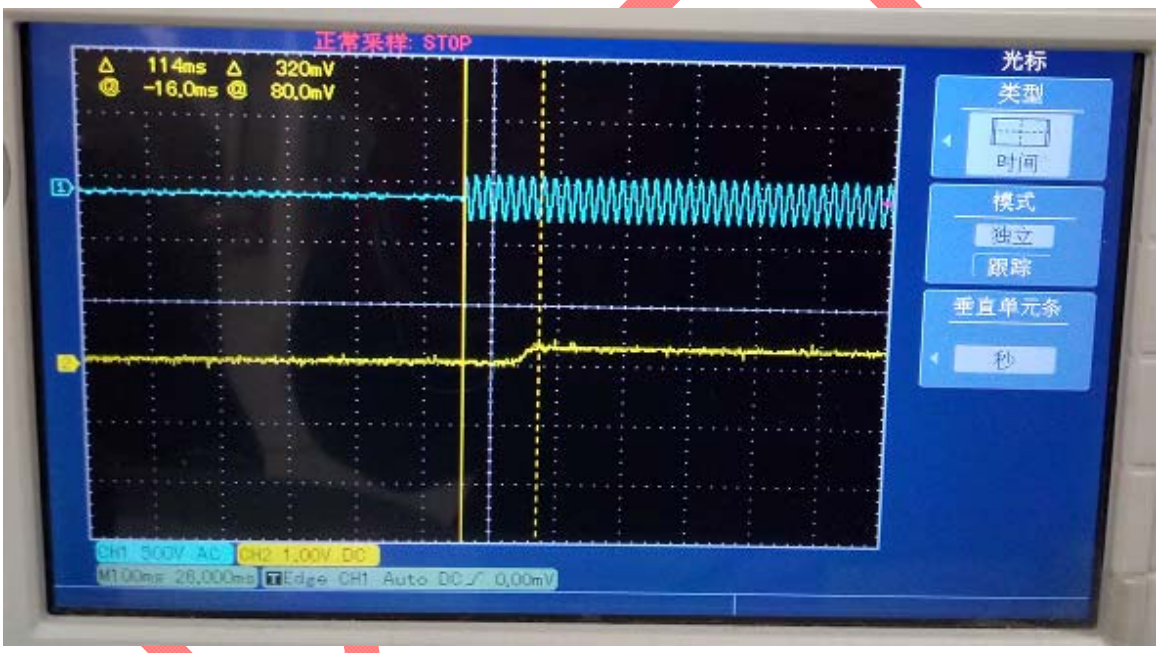
2.3 Start Time Test

Test date	2017-05-17	Test Ambient:	25.2 º C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	ULD6-27		

Electrical Measurement:

Sample No.	Start Time (ms)
GZE170330-H-C1	114
GZE170330-H-C4	100
GZE170330-H-C5	98.0
Average	104

Graph (Start Time):



2.4 In-Situ Temperature Measurement Test (ISTMT)

Test date	2017-05-17	**Test Ambient:**	25.2 º C
Test Orientation	As intended	**Stabilization Time (min)**	90
Model Number	ULD6-27		

Electrical Measurement:

Input Vol./Frequency	**120 V / 60 Hz**		**Output Current of Single LED(mA)**	**42.9**	
Sample No.	**LED Package Model**	**Maximum Measured LED Ts Point Temperature (°C)**	**Maximum LED Ts Point Temperature Limited (°C)**	**Maximum Measured LED Driver Td Point Temperature (°C)**	**Maximum LED Driver Td Point Temperature Limited (°C)**
GZE170330-H-C1	67-21S Series	52.6	105	48.8	105
GZE170330-H-C4		52.1		50.1	
GZE170330-H-C5		52.3		49.1	
GZE170330-H-C6		53.4		50.9	
GZE170330-H-C7		52.7		50.9	
GZE170330-H-C8		51.8		49.6	
GZE170330-H-C9		51.3		49.3	
GZE170330-H-C10		52.5		49.3	
GZE170330-H-C11		52.5		50.1	
GZE170330-H-C12		53.4		49.0	

Results

Time (t) at which to estimate lumen maintenance (hours):	36,000
Lumen maintenance at time (t) (%):	84.12%
Reported L70 (hours):	>36000

2.5 Dimming, Reduced Flicker Operation and Audible Noise

Test date	2017-05-17	Test Ambient:	25.2 º C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	ULD6-27		

Electrical Measurement:

Dimmer Model	LEVITON MFG CO INC (E31373), Cat. No. 6681		
Sample No.	Input	Dimming (100%)	Dimming (<10%)
		Luminous flux (lm)	Luminous flux (lm)
GZE170330-H-C1	120.0 V / 60 Hz	454.1	40.7
GZE170330-H-C4	120.0 V / 60 Hz	466.3	44.1
GZE170330-H-C5	120.0 V / 60 Hz	447.7	38.9
		Dimming (100%)	Dimming (20%)
Sample No.	Input	Peak Noise Reading (dBA)	Peak Noise Reading (dBA)
GZE170330-H-C1	120.0 V / 60 Hz	18.2	19.6
GZE170330-H-C4	120.0 V / 60 Hz	18.8	19.9
GZE170330-H-C5	120.0 V / 60 Hz	17.3	18.5

Dimming Level	100% Dimming Level	20% Dimming Level	Nominal Dimming Level
Percent Flicker (Unfiltered)	19.268%	25.164%	14.589%
Percent Flicker (1000Hz cut-off)	18.964%	24.621%	14.583%
Percent Flicker (400Hz cut-off)	18.433%	24.483%	14.528%
Percent Flicker (200Hz cut-off)	17.519%	21.769%	14.369%
Percent Flicker (90Hz cut-off)	0.309%	4.076%	0.359%
Percent Flicker (40Hz cut-off)	0.202%	0.803%	0.208%

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2016-07-01	2017-06-30
ST-R-331	Spectral analysis system HAAS-2000	2016-07-01	2017-06-30
D204	Standard Lamp	2016-07-01	2017-06-30
PF2010	Power Meter for Integrating Sphere	2016-07-01	2017-06-30
EE-015	Flux Meter	2016-07-01	2017-06-30
ST-R-277	Oscillograph	2016-07-01	2017-06-30
ST-R-EM01	Surge Generator	2016-07-01	2017-06-30
ST-R-EM02	EMC Coupler/Decoupler Module	2016-07-01	2017-06-30
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K			

******** END OF REPORT ********