



Ref. No.: LCZF18020121

Version: 1.0

Date of Issue: Feb. 8, 2018

Total pages: 8



Test report of

IES LM-79-08

Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Rendered to:

Revolution Lighting Technologies, Inc.
2280 Ward Ave Simi Valley, CA 93065, USA

For products:

2x2 Luminaires for Ambient Lighting of Interior Commercial Spaces

Models No.:

152030-115

Test Date: Feb. 3, 2018

Test Item: Total luminous flux, Luminous Efficacy, Electrical values, Chromaticity coordinates, CCT and CRI, Spectral Power Distribution.

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Template No.: LC-RT-PL-005.1.0

Test Note:

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1. General

1.1 Product Information

Brand Name	Revolution Lighting Technologies
Category	Indoor
General Application	Troffer
Product Type	2x2 Luminaires for Ambient Lighting of Interior Commercial Spaces
Model Number	152030-115
Rated Inputs	100-277V, 50/60Hz
Rated Power	22W
Rated Light output	2992lm
Declared CCT	5000K
Power Supply	N/A
LED Package, Array or Module	Model: 67-21S Series, manufactured by EVERLIGHT ELECTRONICS CO., LTD
Receipt Samples	1 unit
Sample Code of lab.	180202102005
Date of Receipt Samples	Feb. 2, 2018
Note	-



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1.2 Standards or methods

The following standards are partly or totally used or referenced for test:

No.	Name
ANSI/NEMA/ ANSLG C78.377-2015	Specifications for the Chromaticity of Solid State Lighting Products
ANSI C82.77-2002	Harmonic Emission Limits—Related Power Quality Requirements for Lighting Equipment
CIE Pub. No. 13.3-1995	Method of Measuring and Specifying Color Rendering of Light Sources
CIE Pub. No. 15:2004	Colorimetry
IES LM-79-08	Electrical and Photometric Measurements of Solid-State Lighting Products

1.3 Equipment list

Instrument	ID	Model name	Cal. date	Next cal. Date
AC Power supply	LC-I-923	CHP-500	2018-01-10	2019-01-09
AC Power supply	LC-I-987	APW-110N	2018-01-10	2019-01-09
Power analyzer	LC-I-928	WT210	2018-01-05	2019-01-05
Power analyzer	LC-I-954	WT210	2018-01-10	2019-01-09
Multimeter	LC-I-972	Fluke 17B	2017-08-08	2018-08-07
Photometric colorimetric electric system (2 meter sphere)	LC-I-900	SPR3000	Before use	Before use
Standard lamp	LC-PL-I-011	D204C	2017-09-07	2018-09-06
Luminous Flux Standard Lamp	LC-PL-I-003	24V100W	2017-09-22	2018-09-21
Goniophotometer(with mirror)	LC-I-902	GMS2000	2017-05-07	2018-05-06
Wireless temperature transmitter	LC-I-978	DWRF-B	2017-02-10	2018-02-09
Wireless temperature transmitter	LC-I-979	DWRF-B	2017-02-10	2018-02-09

2. Test conducted and method

The luminaire was operated at least 2 hours to reach stabilization and temperature equilibrium before test.

2.1 Ambient Condition

The ambient temperature in which measurements are being taken was maintained at $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$; the air flow around the sample(s) being tested did not affect the performance.

2.2 Power Supply Characteristics

The AC power supply had a sinusoidal voltage wave shape at the prescribed frequency (60 Hz) such that the RMS summation of the harmonic components does not exceed 3 percent of the fundamental during operation of the test item.

The voltage of AC power supply (RMS voltage) applied to the device under test was regulated to within ± 0.2 percent under load.

2.3 Seasoning and Stabilization

No seasoning was performed in accordance with IESNA LM-79-08. And before the measurement, the sample was stabilized until the light output and power variations were less than 0.5% in 30 minutes intervals (3 readings, 15 minutes apart).

2.4 Electrical Instrumentation

The calibration uncertainties of the instruments for AC voltage and current were less than 0.2 percent, and the calibration uncertainty of the AC power meter was less than 0.5 percent (95 % confidence interval, $k=2$).

2.5 Color Measurement Method

Spectral radiant flux was measured by a sphere (2 meter)-spectroradiometer system, and the color characteristics (Color rendering index, correlated color temperature, chromaticity coordinate) were calculated from these by software automatically.

2.6 Total Luminous Flux Measurement Method

The customer did not require this measurement.

2.7 Luminous Intensity Distribution Measurement Method

The customer did not require this measurement.

2.8 Spatial Non-uniformity of Chromaticity

The customer did not require this measurement.



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3. Test Result Summary

3.1 Electrical data

Criteria Item	Result
Input Voltage & Frequency	120.00V~60Hz
Input Current(A)	0.177
Total Power(W)	21.09
Power Factor	0.994
I-THD	3.25%
Off-state Power(W)	-

3.2 Photometric data

Criteria Item	Result
Correlated Color Temperature (CCT)(K)	5272
Color Rendering Index (CRI)	85.1
R9	16
Chromaticity Coordinate (x,y)	x = 0.3380 y = 0.3475
Chromaticity Coordinate (u,v)	u = 0.2082 v = 0.3211
Chromaticity Coordinate (u',v')	u' = 0.2082 v' = 0.4816
Duv	0.00086

3.3 Color Rendering Details

R1	R2	R3	R4	R5	R6	R7	R8
84	91	94	85	85	86	87	70
R9	R10	R11	R12	R13	R14	R15	-
16	77	84	62	86	97	79	-

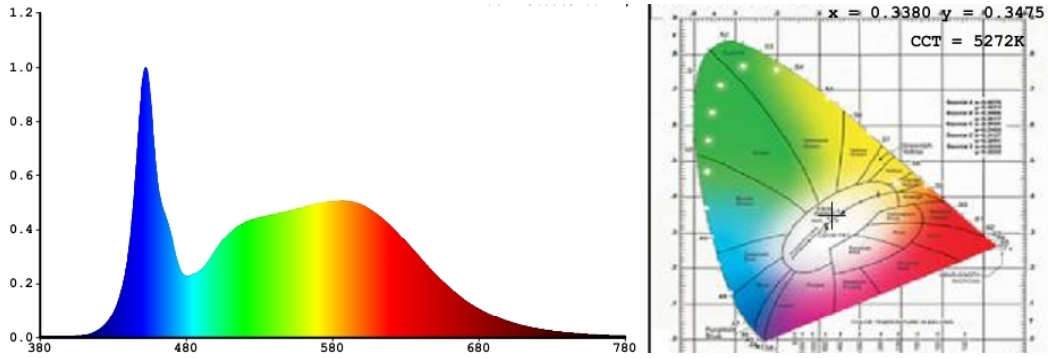
3.4 Additional test at 277V

Criteria Item	Result(Sphere)	Result(Goniophotometer)
Input Voltage & Frequency	277.00V~60Hz	-
Power Factor	0.921	-
I-THD	4.07%	-

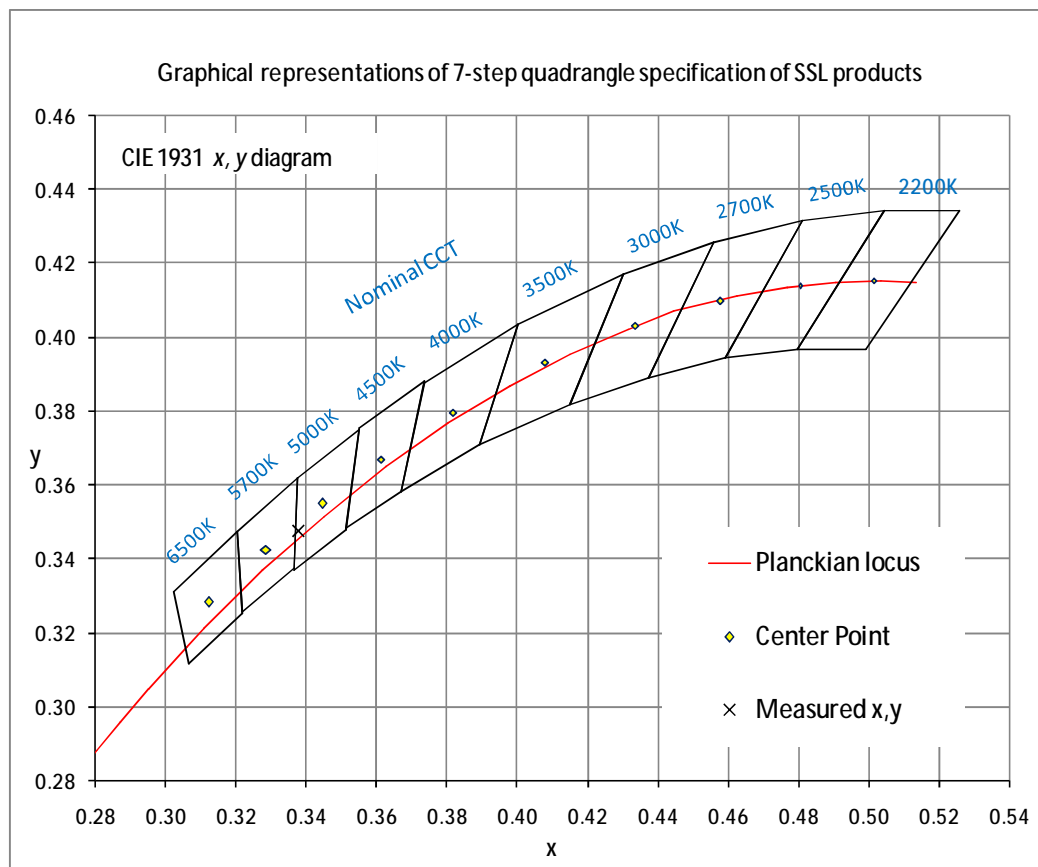
Note: N.A.

4. Test Data

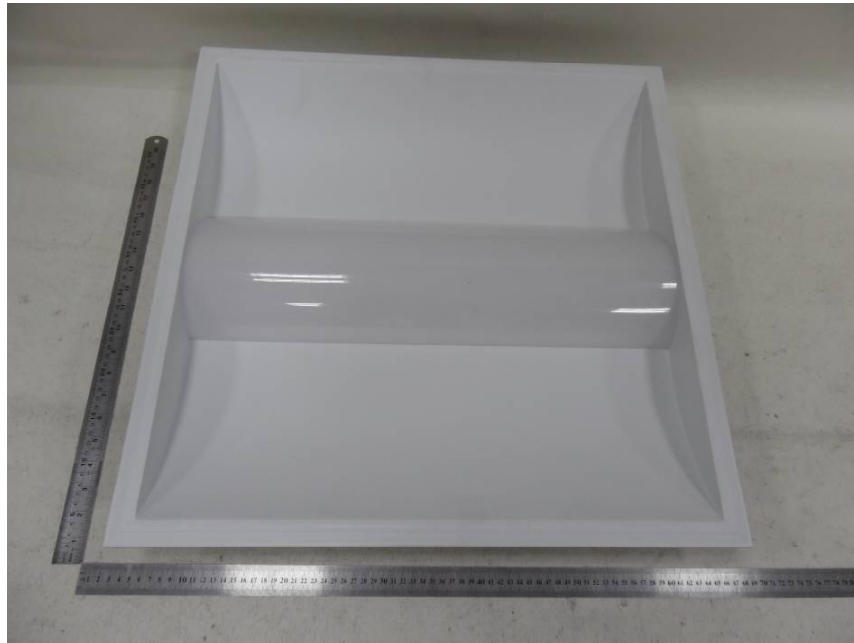
4.1 Spectral Distribution



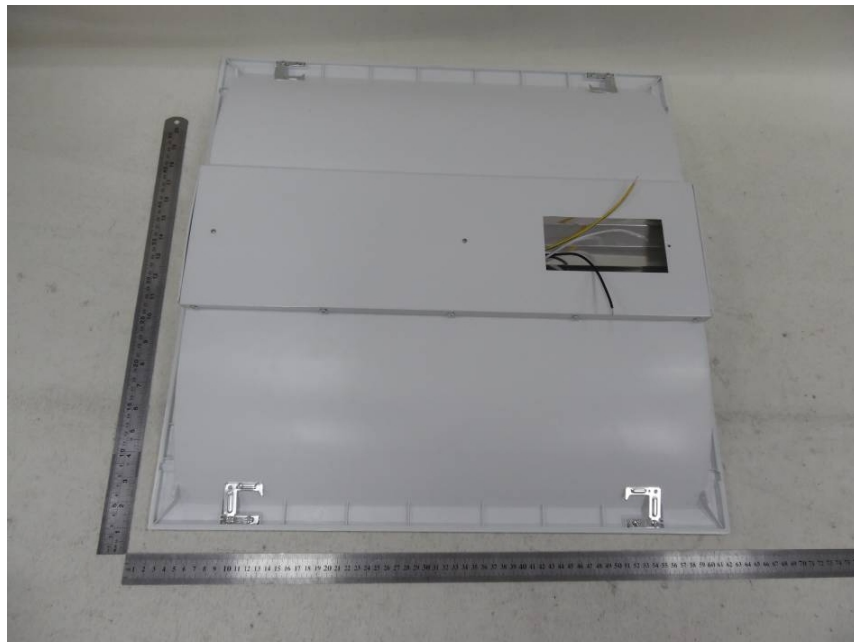
4.2 ANSI Chromaticity Quadrangles Diagram



Appendix 1 Product Photo



Picture 1



Picture 2

****End of test report****