



ENERGY STAR PROGRAM REQUIREMENTS FOR LUMINAIRES (LIGHT FIXTURES) (VERSION 2.0)

MEASUREMENT AND TEST REPORT

For

P.Q.L., Inc.

2285 Ward Avenue Simi Valley, CA 93065

Model: 83758

Report Type: Original Report		Product Type: Non-Directional Ceiling Mount Luminaire	
Test Engineer:	Carl Du	<i>Carl Du</i>	
Report Number:	R2XM170505051-10A1		
Test Date:	2017-04-14 to 2017-04-21		
Report Date:	2017-05-15		
Reviewed By:	Blake Zhang / EE Engineer	<i>Blake Zhang</i>	
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Note: The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan). (Rev. 2.0, 2012-10-05 effected) This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

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1. GENERAL INFORMATION

1.1. Product Description for Equipment under Test (EUT)

The client submitted 2 samples of model 83758, Samples were numbered R2XM170414050-S01, R2XM170414050-S02. The samples were received on 2017-04-14, in undamaged condition.

Model Tested:	83758
Manufacturer:	P.Q.L., Inc.
Product Designation:	Ceiling Mount Luminaire
Classification:	Non-Directional
Rated Voltage/Frequency:	120V 60Hz
Rated Power:	25W
Nominal CCT:	4000K
Rated Life:	35000 hrs
Dimming:	Yes
Dimming Range:	10%-100%
Indoor and Outdoor:	Indoor use only
Connected Product:	No
Color Tunable:	No
Number of LED Components	23
Type of LED Components:	LED Package
Model of LED Components:	SPMWHT327F*****
Light Source Manufacturer:	SAMSUNG ELECTRONICS LED BUSINESS
LM-80 Report:	Yes
The Number of LED Driver:	1
Driver Manufacturer:	N/A
Rated Maximum TMP _C :	85 °C
Model of Dimmer Used During Test:	CTCL-153P
Brand of Dimmer:	LUTRON
Type of Dimmer:	Continuous dimmer

Note:

1. The applicant *P.Q.L., Inc.* declare that their product with model 83758 are the same to the product in report# R2XM170414050-10 and is authorized by original applicant to use their test data.
2. All the data in previous report (R2XM170414050-10) is shared in report.

1.2. Statement of Traceability:

Bay Area Compliance Laboratories Corp. (Dongguan) attested that all calibration has been performed using suitable standards traceable to National Primary Standards and International System of Units (SI).

2. SUMMARY OF TEST RESULT

Test Result of Light Engine

Item	Measured(Avg.)	Verdict	Requirement
Luminous Efficacy (lm/W)	87.44	PASS	≥ 65 lm/W
Light Output(lm)	2229.8	PASS	Installed in the luminaire,each LED light engine <i>in situ</i> shall provide a minimum of 450 lumens
CCT (K)	4056	PASS	The luminaire shall fall within the corresponding 7-step chromaticity quadrangles as defined in ANSI/NEMA/ANSLG C78.377-2011.
R _a	87.8	PASS	R _a ≥ 80
R ₉	33	PASS	R ₉ ≥ 0
Start Time(ms)	226.0	PASS	≤ 750 ms
Transient Protection	See tables	PASS	Sample shall survive after seven strikes
Operating Frequency (Hz) ⁱ	120.19	PASS	≥ 120 Hz

Test Result of LED Luminaires

Item	Measured	Verdict	Requirement
Lumen Maintenance Life ⁱⁱ	>36000 (See Attachment A)	PASS	$\geq 25,000$ hours (For indoor use only)
Color Maintenance ⁱⁱⁱ	See Attachment A	PASS	≤ 0.007
Power Factor	0.8209	PASS	For power ≤ 5 W; PF ≥ 0.5 For Power >5W, PF ≥ 0.7
Off –State Power (W)	N/A ^{iv}	PASS	Luminaires shall not draw power in the off state.
Light Source Replaceability	See Section 4	PASS	LED light engines shall make use of electrical interconnects which allow for consumer replacement of the engine without the cutting of wires or the use of solder.
Driver Replaceability	See Section 4	PASS	LED light engines shall make use of electrical interconnects which allow for consumer replacement of the engine without the cutting of wires or the use of solder.
Driver Case Temperature(°C)	77.9	PASS	The measured driver case temperature at thermal equilibrium shall not exceed the driver manufacturer's maximum recommended temperature 85° C during in situ operation.
Dimming ⁱ	See tables	PASS	Provide continuous dimming from 100% to 20%
Noise(dBA) ⁱ	21.6	PASS	≤ 24 dBA at 1 meter or less at the minimum output
Light Source Shipment	N/A	PASS	Complete light source components shall be provided with the luminaire.

Note:

- i. Operating frequency, dimming and noise are not accredited by the IAS.
- ii. TM-21 calculator is used to calculate the L₇₀ life. Test data from LM-80 test report of LED light source was used.
- iii. Color Maintenance referenced to LM-80 test report of LED light source.
- iv. According to IEC 62301-2011, This *Type A* product has no secondary function load and no power switch.

3. TEST RESULT

3.1. Driver Case Temperature and in Situ TMP_{LED} Temperature Test

Test Method and ENERGY STAR Requirements:

ANSI/UL 1598-2008: Standard for Safety of Luminaires

ENERGY STAR Requirements:

In the sample luminaire, the in situ TMP_{LED} temperature is less than or equal to the temperature specified in the LM-80 test report for the corresponding or higher drive current, within the manufacturer's specified operating current range.

The drive current measured in the luminaire is less than or equal to the drive current specified in the LM-80 test report at the corresponding temperature or higher.

At the temperature measurement point for the hottest location on the driver case (TMP_c as detailed by the driver manufacturer), the measured driver case temperature at thermal equilibrium shall not exceed the driver manufacturer's maximum recommended temperature during in situ (installed in the luminaire) operation.

Test Procedure:

One sample was mounted according to ANSI/UL 1598-2008 and operated until constant temperatures were obtained. A temperature was considered constant if the sample was operating for at least three hours and upon three successive readings - taken at 15 minute intervals - were within one degree and were not rising. The sample was connected to a 120V, 60 Hz source of supply.

Thermocouples were attached at locations described in the results by means of a cement made of water glass and Fuller's earth, solder, or epoxy. The drive current of LED package/module/ array was calculated as the total output current of the driver measured by multimeter, divided by the number of branches in parallel of LEDs.

Test Equipment:

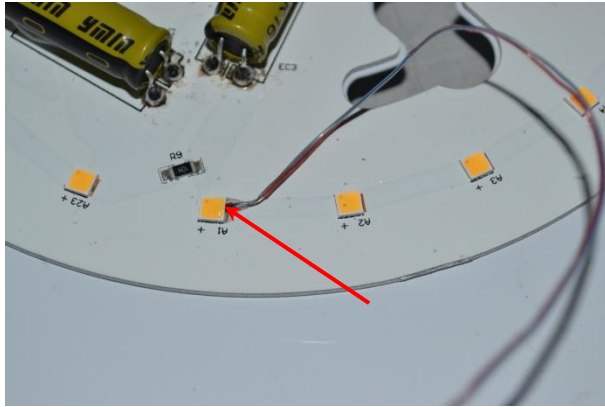
Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
Multimeter	FLUKE	17B	1573 1328	400nV~4000nV, 4V~1000V	2017-03-03	2018-03-02
Hybrid Recorder	YOKOGAWA	DR240	10#	N/A	2017-03-03	2018-03-02
Power Supply	HengPu	HPA 1103	0003394	3KVA	2017-03-03	2018-03-02

Uncertainty:

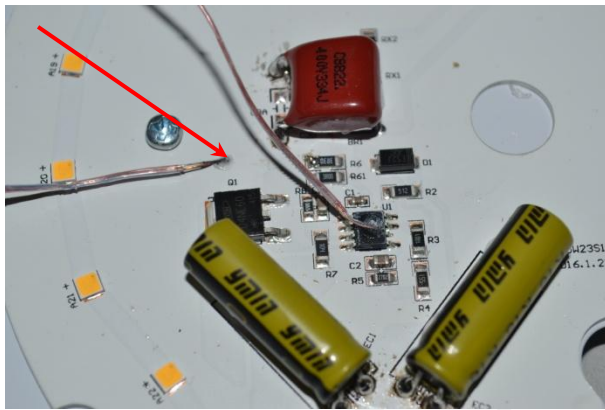
The uncertainty of the temperature is $U=0.9\text{ }^{\circ}\text{C}$ ($K=2$), at the 95% confidence level.

Test Data:

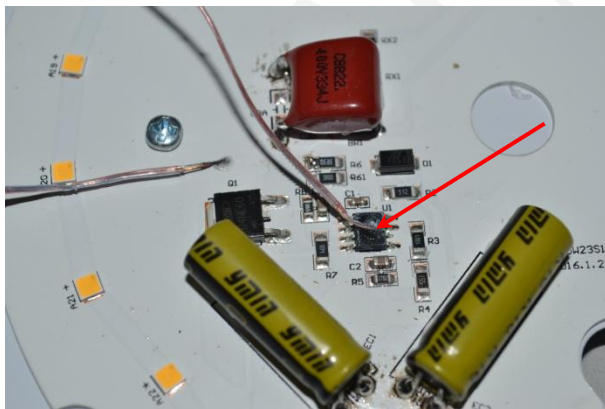
Temperature measurement point of LED light source (TMP_{LED})



Temperature measurement point of LED board (TMP_b)



Temperature measurement point of driver (TMP_d)



Sample No.	R2XM170414050-S01
Type of Thermocouples:	T
Test Duration	≥ 3.5 hours
Maximum Recommended Driver Case Temperature	85° C
Test Location	Test Result
TMP _{LED}	85.2 °C
TMP _b	74.1 °C
TMP _c	77.9 °C
Driver Current of LED	Test Result
IF (mA)	148.8 mA

See attachment A: LM-80 test report and TM-21 calculator.

3.2. Photometric and Electrical Measurements of LED Light Engine

Test Method and ENERGY STAR Requirements:

IES LM-82-12: Approved method for the Characterization of LED Light Engines and Intergrated LED Lamps for electrical and photometric Properties as a function of Temperature

ANSI/UL 8750-2009: Standard for Light Emitting Diode (LED) Equipment for Use in Lighting Products

CIE Pub. No. 13.3-1995: Method of Measuring and Specifying Color Rendering of Light Sources

CIE Pub. No. 15:2004: Colorimetry

ENERGY STAR Requirement:

Efficacy of light engine: ≥ 65 lm/W;

Installed in the luminaire, each LED light engine in situ shall provide a minimum of 450 lumens

CCT Requirements of light engine: fall within a 7-step chromaticity quadrangles for CCT: 2700K, 3000K, 3500K, 4000K, 5000K

CRI Requirements of lght engine: $R_a \geq 80$, $R_9 > 0$

Test Procedure:

The sample was tested with no season. Before all photometric measurements are taken at any given temperature, the UUT shall be operated long enough to reach stabilization and temperature equilibrium. It should be judged that stability is reached when the variation (maximum – minimum) of at least 3 readings of the light output and electrical power over a period of 30 min, taken 15 minutes apart, is less than 0.5 %, and the readings shall not be increasing or decreasing monotonically. Room Temperature Initial Measurement and Room Temperature Calibration Measurement were conducted to determine the correction factor of electric power, luminous flux, and chromaticity. Elevated temperature photometric measurement was conducted at the condition that T_b temperature according to IES LM-82 was set $T_{b_i} + 25^\circ\text{C}$ and additional temperature manufacturer specified. The elevated temperature measurement test result is reported after corrected by correction factor. Luminous efficacy was calculated by corrected power and luminous flux.

Radiant flux measurements are taken at 5 nm intervals over the range 380 to 780 nm. The spectral photometer was calibrated by luminous flux standard Lamp. Electrical measurements including voltage, current, power, power factor and harmonic analysis are measured using the Digital Power Analyzer.

Light engine was tested without fixture. For the photo of light engine, see section4.

Test Equipment:

Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
Integrating Sphere	SENSING	SPR-600	S09008	25~50 °C	2017-03-09	2018-03-08
High Accuracy Array spectroradiometer	EVERFINE	HAAS-2000	M112048CA1361125	380-780nm	2016-07-08	2017-07-07
Power meter	YOKOGAWA	WT310	C20E17024V	2kV/20A	2016-07-08	2017-07-07
DC Power Supply	ITECH	IT6154	0061 0417 6471 0010 19	0~32V	2017-03-03	2018-03-02
Thermal Meter	SENSING	N/A	N/A	25、50 °C	2017-03-09	2018-03-08
Standard Light Source	SENSING	N/A	LSD090808	N/A	2016-12-05	2017-12-04
AC Power Supply	ALL Power	APW-105N	970613	220V ±10% 50Hz	2017-03-03	2018-03-02

Uncertainty:

The uncertainty of the light output (luminous flux) measurements is $U=1.8\%$ ($K=2$), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is $U=20K$ ($K=2$), at the 95% confidence level. The uncertainty of the CRI is $U=1.8(K=2)$, at the 95% confidence level.

The uncertainty of power meter AC current $U=0.19\%$ of rdg, AC Voltage $U=0.15\%$ of rdg, Power $U=0.20\%$ ($K=2$), at the 95% confidence level.

The uncertainty of the temperature is $U=0.9\text{ }^{\circ}\text{C}$ ($K=2$), at the 95% confidence level.

Test Data:

Room Temperature Initial Measurement (Ambient temperature= $25\text{ }^{\circ}\text{C}$)

SampleNo.	Voltage(V)	Current (A)	Power (W)	PF	Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)	R _a	R ₉	x	y	T _{b,i} (°C)	T _{d,i} (°C)
Light Engine 1#	120.0	0.2524	25.35	0.8368	2192.3	86.48	4041	87.6	32	0.3769	0.3689	70.9	75.2

Room Temperature Calibration Measurement (at $T_{b,0}=T_{b,i}$)

SampleNo.	Voltage(V)	Current (A)	Power (W)	Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)	R _a	R ₉	x	y	T _{b,0} (°C)	T _{d,0} (°C)
Light Engine 1#	120.0	0.2524	25.36	2189.2	86.33	4041	87.6	31	0.3768	0.3688	71.1	75.3

Measurement at Temperature $T_{b,1}=T_{b,i}+25\text{ }^{\circ}\text{C}$

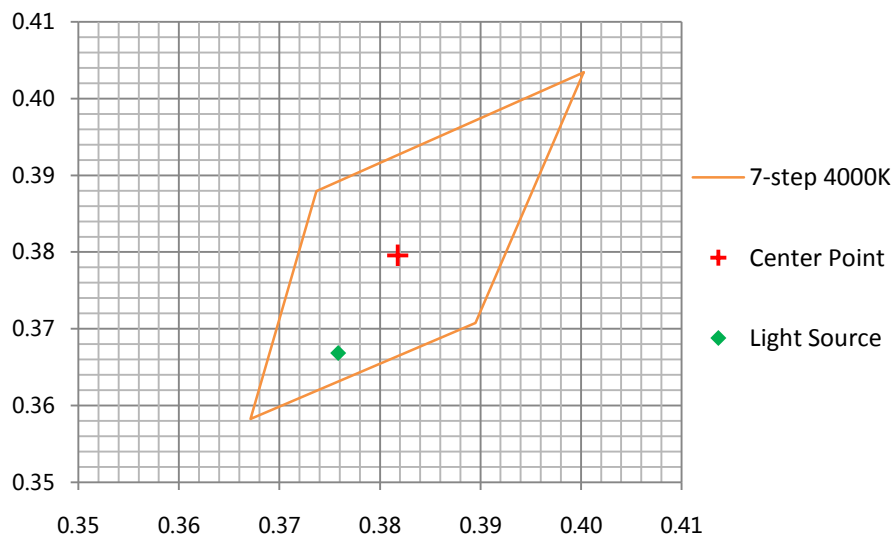
SampleNo.	Voltage(V)	Current (A)	Power (W)	Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)	R _a	R ₉	x	y	T _{b,1} (°C)	T _{d,1} (°C)
Light Engine 1#	120.0	0.2526	25.54	2097.6	82.13	4089	87.7	32	0.3746	0.3663	96.2	99.7

Measurement at Temperature $T_{b,2}=50\text{ }^{\circ}\text{C}$

SampleNo.	Voltage(V)	Current (A)	Power (W)	Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)	R _a	R ₉	x	y	T _{b,2} (°C)	T _{d,2} (°C)
Light Engine 1#	120.1	0.2524	25.61	2433.2	95.01	4033	88.2	34	0.3762	0.3653	50.3	55.8

Linear interpolation at Temperature $T_b=74.1\text{ }^{\circ}\text{C}$

SampleNo.	Interpolated Power (W)	Interpolated Flux (lm)	Efficacy (lm/W)	Interpolated CCT(K)	Interpolated R _a	Interpolated R ₉	Interpolated x	Interpolated y
Light Engine 1#	25.50	2229.8	87.44	4056	87.8	33	0.3758	0.3669



3.3. Photometric and Electrical Measurements of Luminaire

Test Method and ENERGY STAR Requirements:

IES LM-79-08: Approved Method: Electrical & Photometric Measurement of Solid-state Lighting Products

ANSI C82.77:2014: Harmonic Emission Limits - Related Power Quality Requirements for Lighting Equipment
ANSI/UL 8750-2009: Standard for Light Emitting Diode (LED) Equipment for Use in Lighting Products

CIE Pub. No. 13.3-1995: Method of Measuring and Specifying Color Rendering of Light Sources

CIE Pub. No. 15:2004: Colorimetry

ENERGY STAR Requirement:

Power Factor Requirements: $\leq 5W, PF \geq 0.5$; $> 5W, PF \geq 0.7$

Test Procedure:

The photometric tests were performed after the lamps were seasoned. Spectral radiant flux measurements are made using Spectroradiometer attached to the detector port of the integrating sphere. Each lamp is operated at rated voltage in its designated orientation. Each lamp is allowed to stabilize from 30 min to 2 or more hours before measurements are made. Luminous flux, chromaticity coordinates, correlated color temperature, u' , v' and color rendering index for each lamp are calculated from the spectral radiant flux measurements taken at 5 nm intervals over the range 380 to 780 nm. The calibration of the sphere photometer-spectroradiometer system is traceable to The National Metrology Institute of China, NIM. Lamp efficacy (lumens per watts) for each lamp model is computed based on this luminous flux result. Electrical measurements including voltage, current, power, power factor and harmonic analysis are measured using the Digital Power Analyzer.

Test Equipment:

Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
2.0m integrating sphere	EVERFINE	R98	11010018	R98	2016-11-18	2017-11-17
spectroradiometer	EVERFINE	HAAS-2000	20140912	380-780nm	2016-11-18	2017-11-17
Digital Power Meter	EVERFINE	PF2010A	1011004	600V/20A	2016-07-11	2017-07-10
Digital CC&CV DC Power Supply	EVERFINE	WY305-V1	1101047	30V/5A	2016-07-07	2017-07-06
Rapid recording photometer	EVERFINE	PHOTO-2000F	1007010	0.1lm—200klm	2016-12-30	2017-12-29
Standard Light Source	SENSING	N/A	LSD090808	N/A	2016-12-05	2017-12-04
Special zero-voltage synchronous switching AC	EVERFINE	DPS1010-YF	1011001T	0-150V, 0-300V	2017-03-03	2018-03-02

Uncertainty:

The uncertainty of the light output (luminous flux) measurements is $U=2.1\%$ ($K=2$), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is $U=32K$ ($K=2$), at the 95% confidence level. The uncertainty of the CRI is $U=2.1$ ($K=2$), at the 95% confidence level.

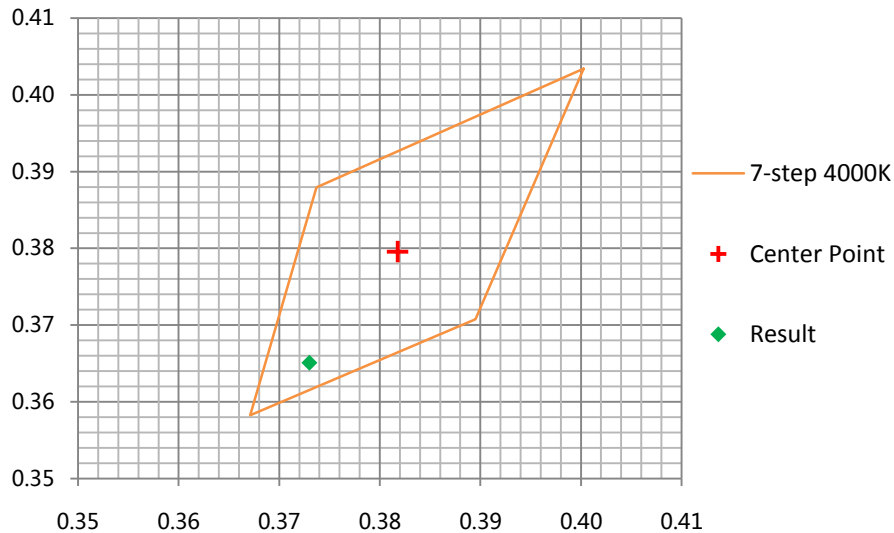
The uncertainty of power meter AC current $U=0.19\%$ of rdg, AC Voltage $U=0.15\%$ of rdg, Power $U=0.20\%$ ($K=2$), at the 95% confidence level.

Test Data:

Photometric and Electrical Measurements at 25 °C

Sample No.	Voltage (V)	Current (A)	Power (W)	Power Factor	Luminous Flux (lm)	Efficacy (lm/W)	CCT (K)
R2XM170414050-S01	120	0.2616	25.77	0.8209	1612.8	62.58	4127

Sample No.	CRI	R ₉	x	y	u'	v'	Duv
R2XM170414050-S01	89.0	38	0.3730	0.3651	0.2249	0.4952	-0.00332



3.4. Start Time**Test Method and ENERGY STAR Requirements:****Test Method**

ENERGY STAR Test Method: Start Time Test

ENERGY STAR Requirement:

Light source shall remain continuously illuminated within 750 ms (1 second for connected product) of application of electrical power.

Test Procedure:

Integrating sphere, oscilloscope, photocell were used during start time test.

Sample shall be stored at $25\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ for a minimum of 16 hours prior to the test, after which the temperature range shall be $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ for at least two hours immediately prior to the test. Sample was tested at rated voltage. The start time is defined that the time between the application of power to the device and the point where light output reaches 98% of the lamp's initial plateau.

Test Equipment:

Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
2.0m integrating sphere	EVERFINE	R98	11010018	R98	2016-11-18	2017-11-17
Digital Power Meter	EVERFINE	PF2010A	1011004	600V/20A	2016-07-11	2017-07-10
Digital real-time oscilloscope	Tektronix	TDS 220	C033131	N/A	2016-09-01	2017-08-31
Sensor	EVERFINE	V-10111	A8331337	N/A	N/A	N/A
Thermal Meter	Anymetre	JR900A	N/A	N/A	2017-01-11	2018-01-10
Special zero-voltage synchronous switching AC	EVERFINE	DPS1010-YF	1011001T	0-150V, 0-300V	2017-03-03	2018-03-02

Uncertainty:

The uncertainty of Start time $U=0.6\%$ ($K=2$), at the 95% confidence level.

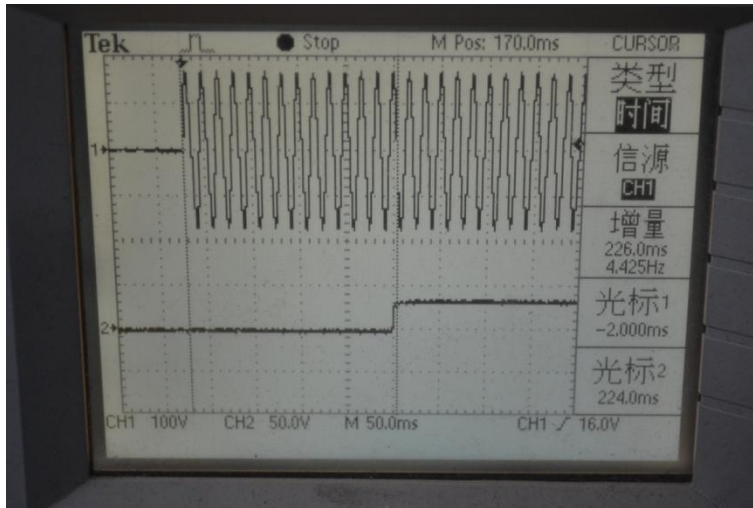
Test Data:

Test date: 2017-04-14 Test voltage AC 120 V 60 Hz.

Sample No.	Time base (ms/div)	Start Time(ms)
R2XM170414050-S01	50.0	226.0

Figure of Input voltage and light output waveforms

R2XM170414050-S01



3.5. Transient Protection

Test Method and ENERGY STAR Requirements:

ANSI/IEEE C62.41.1-2002: IEEE Guide on the Surge Environment in Low-Voltage (1000 V and Less) AC Power Circuits

ANSI/IEEE C62.41.2-2002: IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000V and Less) AC Power Circuits

ENERGY STAR Requirement:

Ballast or driver shall comply with ANSI/IEEE C62.41.1-2002 and ANSI/IEEE C62.41.2-2002, Category A operation. 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.

Test Procedure:

Seven strikes were performed on lamp base in accordance with ANSI/IEEE C62.41 (Category A). 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. Samples should be fully operational after seven strikes.

Test Equipment:

Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
AC Power source	HengPu	HPA 1103	0003394	3KVA	2017-03-03	2018-03-02
MODULAR IMPULSE GENERATOR	EMC-PARTNER	MIG0603IN1 IEC-ANSI	593	N/A	2017-03-03	2018-03-02

Uncertainty:

The uncertainty of voltage $U=1.07\%$ ($K=2$), at the 95% confidence level.

The uncertainty of time $U=0.6\%$ ($K=2$), at the 95% confidence level.

Test Data:

Sample No.	Transient Protection Test
R2XM170414050-S01	PASS

3.6. Operating Frequency

These test method was not accredited by the IAS

Test Method and ENERGY STAR Requirements:

ENERGY STAR Requirements:

≥ 120 Hz

Test Procedure:

The sample was operated at rated voltage in its designated orientation during the test. Lamp was measured by a photodetector, integrating sphere and rapid recording photometer. For dimmable lamps, test was performed with dimmer at three levels: full light output level, medium light output level and minimum light output level. The final result would be the minimum of the three test results.

Test Equipment:

Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
Rapid recording photometer	EVERFINE	PHOTO-2000F	1007010	0.1lm—200klm	2016-12-30	2017-12-29
2.0m integrating sphere	EVERFINE	R98	11010018	R98	2016-11-18	2017-11-17
Digital Power Meter	EVERFINE	PF2010A	1011004	600V/20A	2016-07-11	2017-07-10
Thermal Meter	Anymetre	JR900A	N/A	N/A	2017-01-11	2018-01-10
Special zero-voltage synchronous switching AC	EVERFINE	DPS1010-YF	1011001T	0-150V, 0-300V	2017-03-03	2018-03-02

Uncertainty:

The uncertainty of Operating Frequency $U=0.6\%$ ($K=2$), at the 95% confidence level.

Test Data:

Sample No.	Operating Frequency (Hz)
R2XM170414050-S01	120.19

3.7. Dimming and noise Test

This test method was not accredited by the IAS

Test Method and ENERGY STAR Requirements:

IES LM-79-08: Approved Method: Electrical & Photometric Measurement of Solid-state Lighting Products

ENERGY STAR Requirements:

The luminaire and its components shall provide continuous dimming from 100% to 20% of light output. Luminaire shall not emit noise above 24dBA at 1 meter or less at the minimum output.

Test Procedure:

The photometric measurement test was performed with dimmer specified by manufacturer and detailed as below. For continuous dimmer, the dimmer was set maximum level and minimum level output for photometric measurement.

Sample was transferred to sound insulation chamber to measure the noise level at the lowest dimmable level.

Test Equipment:

Device	Manufacture	Model No	Serial No	Test Range	Calibration date	Calibration due date
spectroradiometer	EVERFINE	HAAS-2000	20140912	380-780nm	2016-11-18	2017-11-17
Rapid recording photometer	EVERFINE	PHOTO-2000F	1007010	0.1lm—200klm	2016-12-30	2017-12-29
2.0m integrating sphere	EVERFINE	R98	11010018	R98	2016-11-18	2017-11-17
Digital Power Meter	EVERFINE	PF2010A	1011004	600V/20A	2016-07-11	2017-07-10
Special zero-voltage synchronous switching AC	EVERFINE	DPS1010-YF	1011001T	0-150V, 0-300V	2017-03-03	2018-03-02
Standard Light Source	SENSING	N/A	LSD090808	N/A	2016-12-05	2017-12-04
Thermal Meter	Anymetre	JR900A	N/A	N/A	2017-01-11	2018-01-10
AC Power source	ALL Power	APW-105N	970613	220V±10% 50Hz	2017-03-03	2018-03-02
Sound Insulation Box	N/A	N/A	01#	N/A	2016-11-25	2017-11-24
Sound Level Meter	Hangzhou Aihua	AWA5661	88071	12~112dB	2016-09-27	2017-09-26

Uncertainty:

The uncertainty of the light output (luminous flux) measurements is $U=2.1\%$ ($K=2$), at the 95% confidence level. The uncertainty of the correlated color temperature measurements is $U=32K$ ($K=2$), at the 95% confidence level. The uncertainty of the CRI is $U=2.0(K=2)$, at the 95% confidence level.

The uncertainty of power meter AC current $U=0.19\%$ of rdg, AC Voltage $U=0.15\%$ of rdg, Power $U=0.20\%$ ($K=2$), at the 95% confidence level.

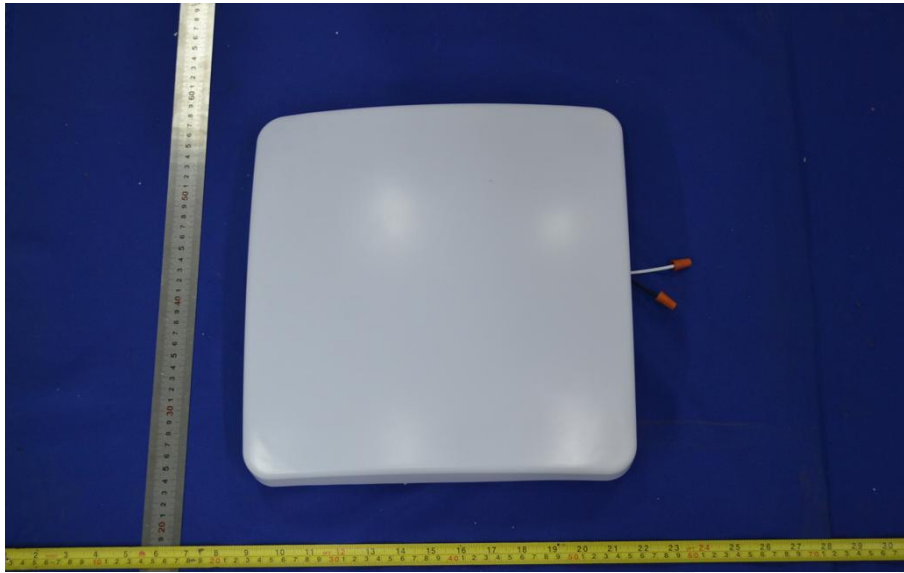
The uncertainty of noise $U=0.5$ dB ($K=2$), at the 95% confidence level.

Test Data:

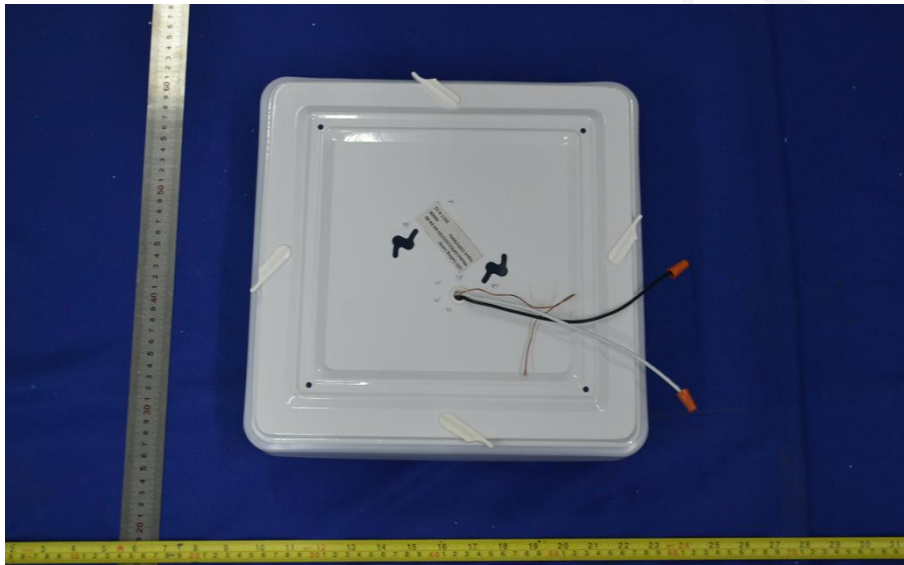
Sample No.		Maximum Level	Minimum Level
R2XM170414050-S01	Light output (Lumen)	1592.1	18.472
	Percentage	100%	1.2%
	Noise(dBA)	/	21.6

4. EUT Photo

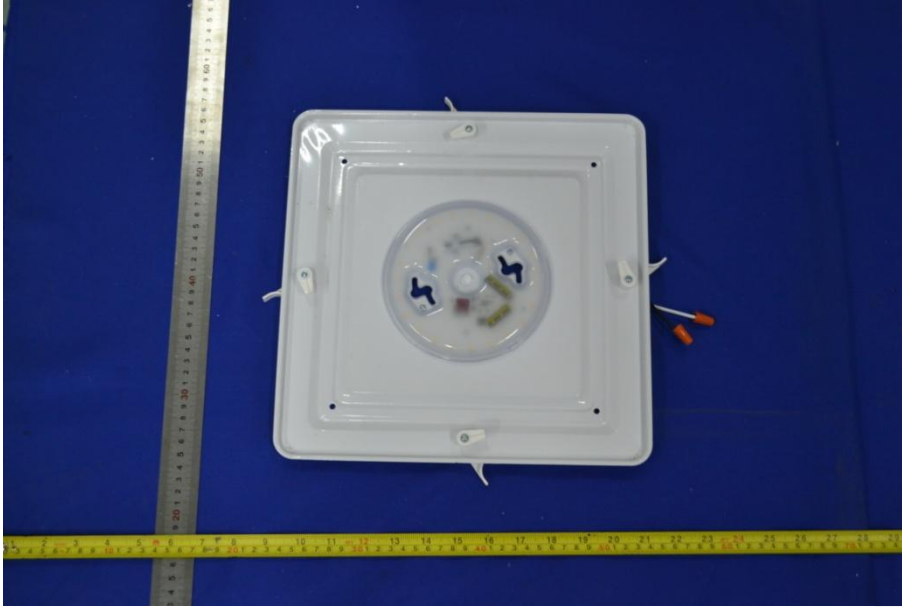
4.1. Luminaire Photo



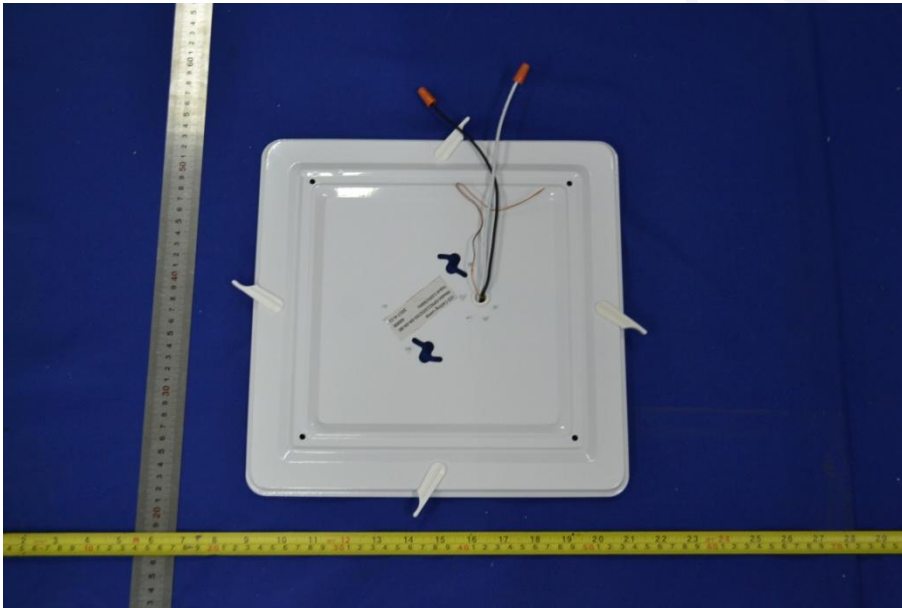
4.2. Luminaire Photo



4.3. Light Engine Photo



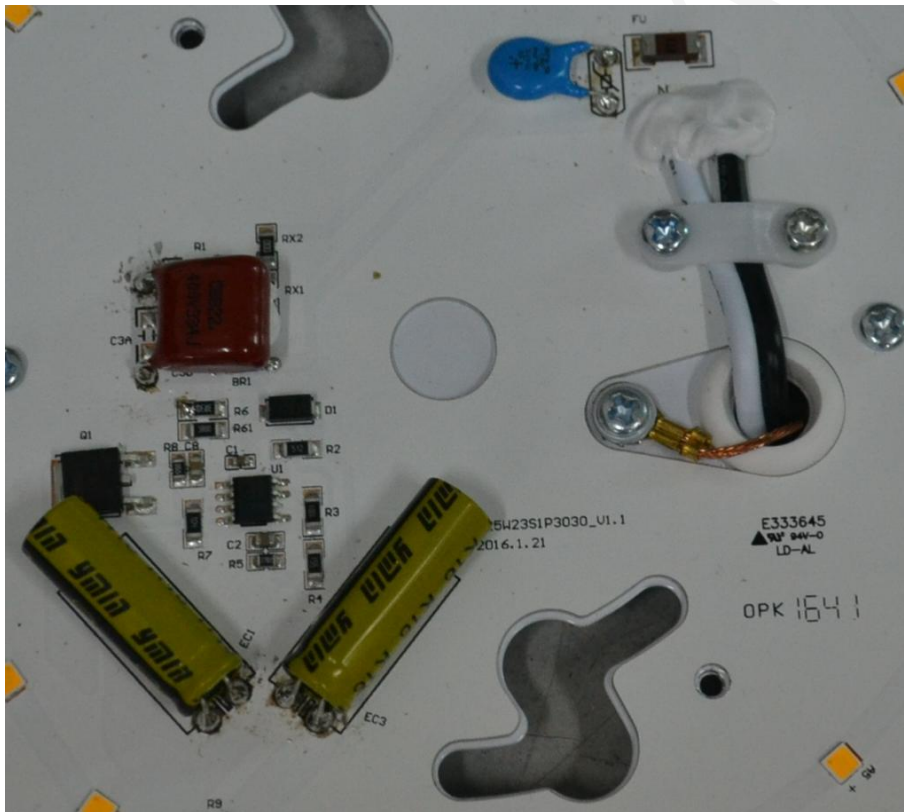
4.4. Light Engine Photo



4.5. LED Source Photo



4.6. LED Driver Photo



4.7. Dimmer Photo



Attachment A –LM-80-08 test report and TM-21 Calculator

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