IES TM-21 Lumen Maintenance Result Report

Report Number.....:	RKEYS250109039
Date of issue.....:	Feb. 12, 2025
Total number of pages.....	9 pages
Tested by (name + signature)..... :	Sunny Li
Approved by (name + signature)...:	Jason Zhan
Testing Laboratory Name.....:	Guangdong KEYS Testing Technology Co., Ltd.
Address.....:	Building 1, No.18, Shihuan Road, Dongcheng Subdistrict, Dongguan, Guangdong, China
Applicant's name.....:	ZHONGSHAN Y-CHEN LIGHTING TECHNOLOGY CO.LTD
Address.....:	6F,01B,No.28, Kanglong N0.3Rd, Xinmao Industrial, Henglan Town, Zhongshan City
Manufacturer's name.....:	ZHONGSHAN Y-CHEN LIGHTING TECHNOLOGY CO.LTD
Address.....:	6F,01B,No.28, Kanglong N0.3Rd, Xinmao Industrial, Henglan Town, Zhongshan City
Test specification:	
Standard..... :	IES TM-21
Non-standard test method.....:	N/A

Test item description.....:	LED STREET LIGHT
Trade Mark..... :	N/A
Model/type reference ..... :	YC-S028-50W
Manufacturer of LED driver..... :	TMX-50W 80-450V
LED driver surge protection..... :	8KV
Model Number of LED chip..... :	LM3030WW-6V-1W
Manufacturer.....:	SHENZHEN LVMING PHOTOELECTRIC CO., LTD
Rating ..... :	AC85-375V, 50/60Hz,50W

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Summary of testing:
Tests performed (name of test and test clause): Test performed at 230Vac, 50Hz according to client requirement.
Testing location: **Guangdong KEYS Testing Technology Co., Ltd.** Building 1, No.18, Shihuan Road, Dongcheng Subdistrict, Dongguan, Guangdong, China
Copy of marking plate: **The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.**

Test item particulars ..... :	LED STREET LIGHT
Classification of installation and use ..... :	Class I
Supply Connection ..... :	Power supply cord
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement ..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)
Testing ..... :	
Date of receipt of test item ..... :	Jan.09, 2025,
Date (s) of performance of tests ..... :	Jan.09, 2025 to Jan.14, 2025

General product information:

LED Module Information:

Model	Rated voltage	Rated Power	LED chip quantity(Pcs)	CRI（Ra）
YC-S005 50W	AC85-375V, 50/60Hz	50W	60	80

LED specification:

Model	Manufacturer	If(mA)	Viewing angle
LM3030WW-6V-1W	SHENZHEN LVMING PHOTOELECTRIC CO., LTD	150	120°

1.1 Description of LED Light Sources

Sample Size:

60Pcs samples were received on 2020-01-03 ,The samples were numbered from S1 to S20, S21 to S40 and S41 to S60.

Manufacture: SHENZHEN LVMING PHOTOELECTRIC CO., LTD

Part Number: LM3030WW-6V-1W

Part Type: LED Package

Drive Level: DC 150mA

Nominal CCT: 2700K

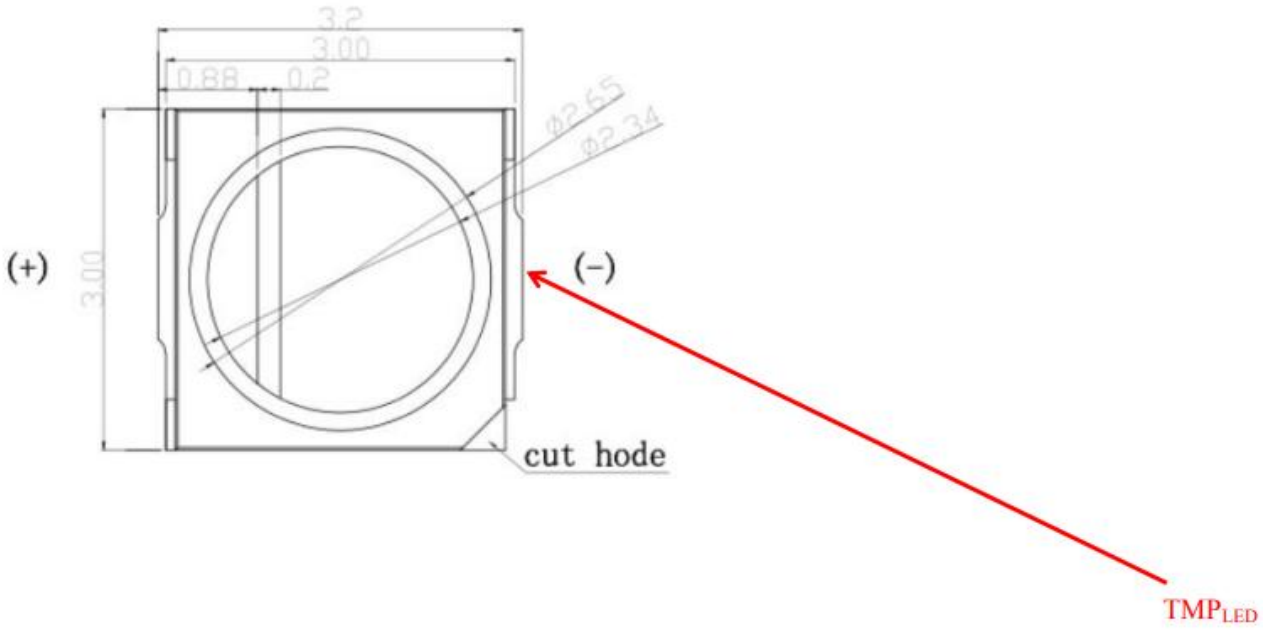
Power: 1W

CRI: 80

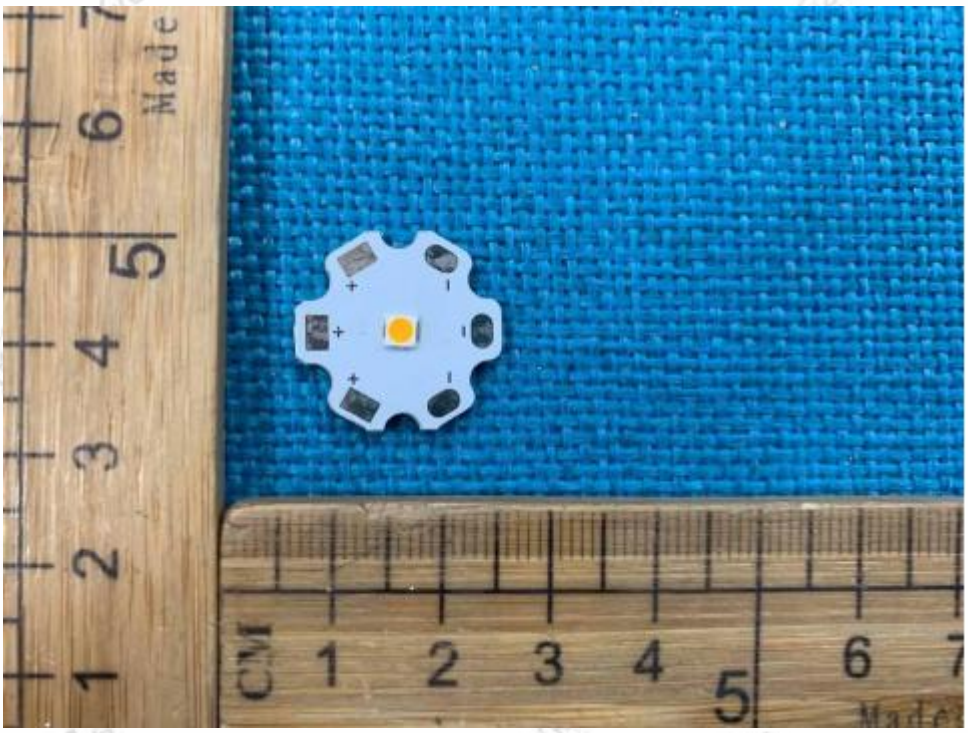
1. Test result:

In-situ case temperature measurements test location

The location of the Ts measurement point is shown below (According to LM-80 test report for Guangdong Meide Testing Technology Co., Ltd.).



The recommended Ts point is located in the bottom of PCT3030



Ts measurement

Tc measurement in LED Modules (downward)	
Model No. YC-S005 50W	Test voltage
	AC230V
Tc measured in luminaire with relevant LED module	Temperature
1# to 3#	55°C, 85°C, 105°C
The highest in-situ temperature	105°C

Input current of LED measurement

If of LED, measurement in LED Modules	
Model No. LM3030WW-6V-1W	Test voltage
	/
IF measured in luminaire with relevant LED	DC150mA

2. Lumen maintenance projection according to TM-21

LM-80 testing details

LM-80 Testing Details	
Total number of units tested per case temperature:	20
Number of failures:	0
Number of units measured:	20
Test duration (hours):	9000
Tested drive current (mA):	150
Tested case temperature 1 (T_c, ^{0}C):	55
Tested case temperature 2 (T_c, ^{0}C):	85
Tested case temperature 3 (T_c, ^{0}C):	105

Test data for 55°C; 85°C; 105°C case temperature

LM-80 Test Inputs

Test Data for 55° C Case Temperature		Test Data for 85° C Case Temperature		Test Data for 105° C Case Temperature	
Time (hours)	Lumen Maintenance (%)	Time (hours)	Lumen Maintenance (%)	Time (hours)	Lumen Maintenance (%)
1000	99.60%	1000	99.42%	1000	99.29%
2000	99.25%	2000	99.18%	2000	99.04%
3000	98.85%	3000	98.74%	3000	98.67%
4000	98.64%	4000	98.53%	4000	98.50%
5000	98.33%	5000	98.26%	5000	98.11%
6000	98.11%	6000	98.08%	6000	98.02%
7000	97.97%	7000	97.76%	7000	97.68%
8000	97.83%	8000	97.65%	8000	97.53%
9000	97.61%	9000	97.59%	9000	97.48%

In-situ inputs

In-Situ Inputs

Drive current for each LED package/array/module (mA):	150
In-situ case temperature (T_c, ^{0}C):	105
Percentage of initial lumens to project to (e.g. for L_{70}, enter 70):	90

Calculated of L70

Results

Time (t) at which to estimate lumen maintenance (hours):	9,000
Lumen maintenance at time (t) (%):	97.37%
Reported L90 (hours):	47,000

3. Conclusion

According to the method of IES TM-21-11, the rated lumen maintenance of product may 98.10% at 9000 hours.

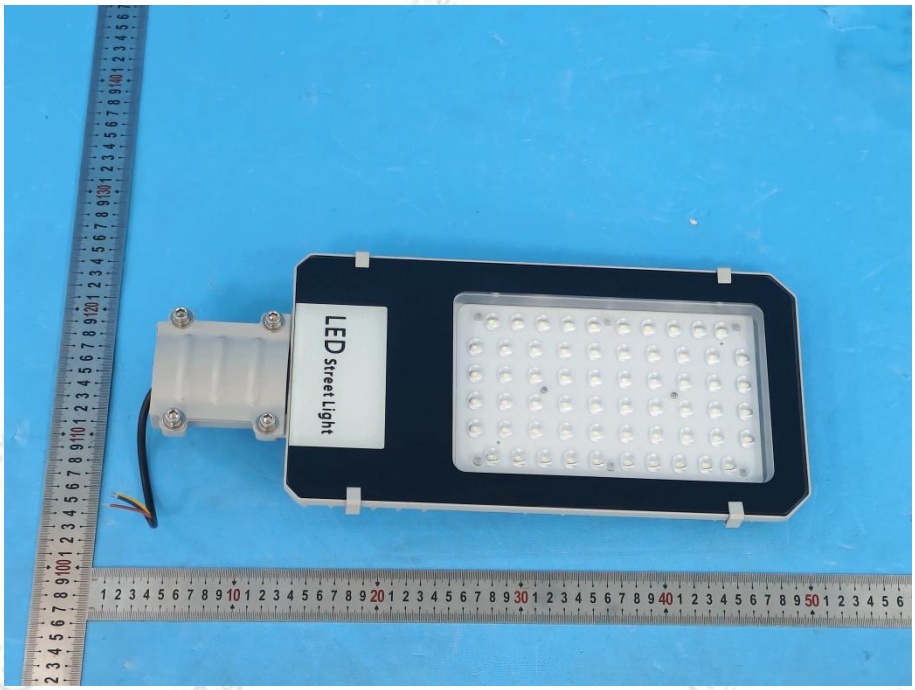
4. " TM-21 Calculator"-Table 1: Report From at LM-80 Test Condition

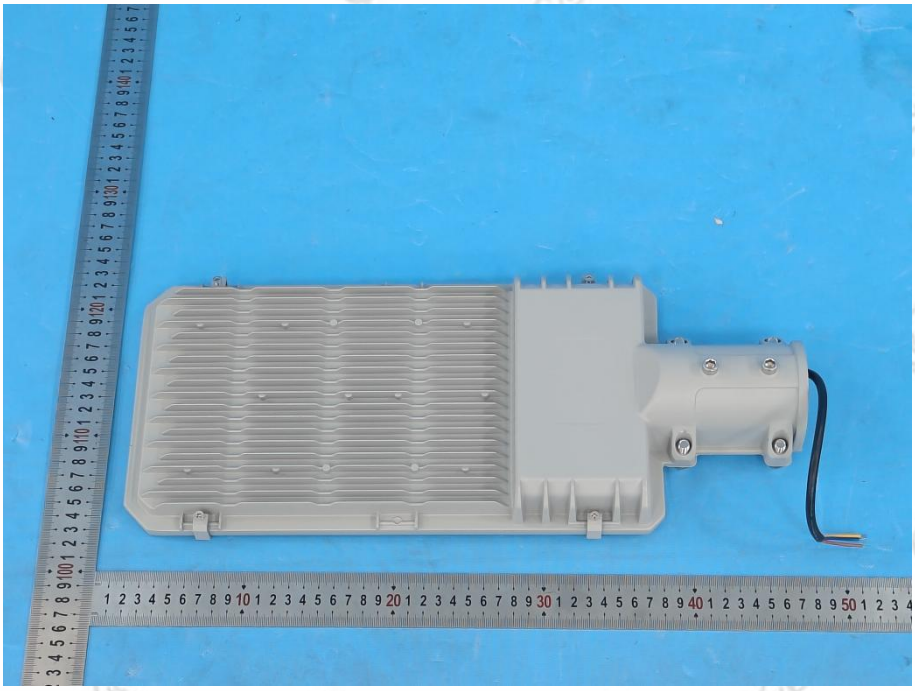
Table 1: Report at each LM-80 Test Condition					
Description of LED Light Source Tested (manufacturer, model, catalog number)		ZHONGSHAN Y-CHEN LIGHTING TECHNOLOGY CO.LTD Model:YC-S028-50W			
Test Condition 1 - 55° C Case Temp		Test Condition 2 - 85° C Case Temp		Test Condition 3 - 105° C Case Temp	
Sample size	20	Sample size	20	Sample size	20
Number of failures	0	Number of failures	0	Number of failures	0
DUT drive current used in the test (mA)	150	DUT drive current used in the test (mA)	150	DUT drive current used in the test (mA)	150
Test duration (hours)	9,000	Test duration (hours)	9,000	Test duration (hours)	9,000
Test duration used for projection (hour to hour)	4,000 - 9,000	Test duration used for projection (hour to hour)	4,000 - 9,000	Test duration used for projection (hour to hour)	4,000 - 9,000
Tested case temperature (° C)	55	Tested case temperature (° C)	85	Tested case temperature (° C)	105
α	1.977E-06	α	1.997E-06	α	2.095E-06
B	0.993	B	0.993	B	0.992
Reported L90(9k) (hours)	50,000	Reported L90(9k) (hours)	49,000	Reported L90(9k) (hours)	45,000 47,000

5. " TM-21 Calculator"-Table 2: Interpolation Report (projection based on in-situ temperature entered .

Table 2: Interpolation Report (projection based on *in-situ* temperature entered)	
$T_{s,1}$ (° C)	105.00
$T_{s,1}$ (K)	378.15
α_1	2.095E-06
B_1	0.992
$T_{s,2}$ (° C)	-
$T_{s,2}$ (K)	-
α_2	-
B_2	-
E_a/k_b	-
A	-
B_0	0.992
$T_{s,i}$ (° C)	105.00
$T_{s,i}$ (K)	378.15
α_i	2.095E-06
Reported L90(9k) at 105° C (hours)	47,000

Product photo





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