TEST REPORT

Kunde: *Client:*	MIC Optoelectronic Co., Ltd
Adresse: *Address:*	2nd floor,Third Building, 97# AiNan Road,LongDong, BaoLong Street, LongGang District, Shenzhen, China
Hersteller: *Manufacturer:*	MIC Optoelectronic Co., Ltd
Adresse: *Address:*	2nd floor,Third Building, 97# AiNan Road,LongDong, BaoLong Street, LongGang District, Shenzhen, China
Name der Marke: *Brand Name:*	N/A
Beschreibungdes Produkts: *Product Description:*	LED Street Light
Modelle: *Models:*	MSL-F240
Bewertung: *Rating:*	AC100-277V, 50/60Hz, 240W
Gegenstand der Prüfung: *Test item:*	ISTMT+TM21 Test
Verfahren: *Method:*	According to requirement clause 12.4.1 of IEC 60598-1:2020
Prüfergebnis*: *Test result*:*	Pass

Wareneingangsdatum: *Date of sample receipt*:	**Datum der Prüfung:** *Date of Test:*	**Datum der Emission:** *Date of Issue:*	**Klassifizierung:** *Classification:*
2025-06-16	2025-06-16	2025-06-17	Commission Test

Prüflabor (Testlabor) / Testing Laboratory:
Shenzhen Southern LCS Compliance Testing Co., Ltd.
Room 101-201, Building 39, Xialang Industrial Zone, Heshuikou Community, Matian Street, Guangming District, Shenzhen, Guangdong, China

Test von/Test by:	**Check von/**Check by:	**Genehmigt von/**Approved by:
Rose Cao	Torres He	
Rose Cao/ Project Engineer	Torres He/ Director	Jesse Liu/ Manager

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Modified Information

Version	Report No.	Revision Date	Summary
V1.0	LCSB08234034S	/	Original Version

General product information:

- Measurement was conducted at a stable ambient temperature 25°C±1°C.
- The ISTMT was performed with the cover installed on the LED package and the luminaire was installed according to actual use of the installation status.

Model List:

Model No.	**Rating**	**CCT**	**LED Driver**
MSL-F240	AC100-277V, 50/60Hz, 240W	6500K	X6-320M062

LED specification:

Model/Series	Manufacturer	VF (V)	IF (mA)
L150-6580502400000	LUMILEDS	23.5-26.5V	60mA

Equipment list:

Equipment No.	Equipment Name	Specification data	Cal. Date
SLCS-S-004	Digital Power Meter	YOKOGAWA/ WT210 / 91L424211	2025-4-27
SLCS-S-011	J Thermocouple	DE AO/J	2025-4-28
SLCS-S-210	Temperature rising recorder	34972A	2025-4-30
SLCS-S-102	Aging House	LA-201207002	2024-12-22
SLCS-E-027	Temperature and humidity barometer	/	2025-4-22

1. GENERAL INFORMATION

1.1 Product Information

Information of product:	
Product description	LED Street Light
Model Number	MSL-F240
Manufacturer of LED Driver	MOSO
LED Driver models	X6-320M062
Rated Inputs	AC100-277V, 50/60Hz
Rated Power	240W
Declared CCT.	6500K
LED Package, Array or Module	2S96P, total 192pcs LED chip(s)
Date of Receipt Samples	2025-06-16
Quantity of Receipt Samples	1 unit
Information of LED chip:	
LED Chip Manufacturer	LUMILEDS
LED type	LED Package
Model of the LED chip(s)	L150-6580502400000
Forward voltage of the LED chip	23.5-26.5V
Forward current of the LED chip	60mA
ISTMT temperature of the LED chip	105°C
IES LM-80 Test Report	Report No.: S280e Issue Date: 2017/10/23. Tested and Prepared by: Lumileds LLC.

1.2 Reference Standards or Methods

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

According to requirement clause 12.4.1 of IEC 60598-1:2020

IES LM-84-14: Measuring Luminous Flux and Color Maintenance of LED Lamps, Light Engines, and Luminaires---Annex A: measurement of in-situ conditions LED case temperature.

2. Test Result of ISTMT

2.1 Electrical data

Criteria Item	Result
Input voltage	230Vac, 50Hz
Input current	1.102A
Total power	244.5W
Power factor	0.962
Current on each LED module	53.1mA
Remark: There are 2S96P, total 192pcs LED chip(s) in models MSL-F240, That we are measurement the total current of a driver output was 5100mA, and current on each parallel was 53.1mA (5100mA/96=53.1mA), Because in each series that the forward current on each LED chip(s) was equivalent, so forward current on each LED chip(s) was 53.1mA.	

2.2 Temperature data

Ambient Temperature, °C :	25+1°C	Relative Humidity, %Rh :	45%Rh~75%Rh
Supply voltage:	230Vac, 50Hz	Type of thermocouples:	J
Test Product Model	MSL-F240		
Test LED Model	L150-6580502400000		
Test LED Driver Model	X6-320M062		
Test Duration	≥3.5Hours		

Item	Parts	Test Result (°C)	Revise to ta. (°C)	Limit (°C)
1	Measured maximum Temperature @ TEMLED	71.5	71.4	105
2	tc of LED driver	61.8	61.7	90
3	Ambient	25.1	25.0	--

Remark:

The ISTMT was performed with the cover installed on the LED package and the luminaire was installed according to actual use of the installation status.

3. Lumen Maintenance Projection (IESNA TM-21-11 Method)

3.1 LM-80 report summary for LED chip(s)

Manufactured by	LUMILEDS		
LED Model	L150-6580502400000		
Number of LED light source tested	20units		
Drive Current	60mA		
Case temperature	70°C	85°C	105°C
17000 hours lumen maintenance	97.05%	96.19%	95.38%
17000 hours color maintenance (△u'v')	0.0036	0.0038	0.0044

3.2 Lumen Maintenance Projection for luminaires

Criteria Item	Result
50000h at which to estimate lumen maintenance	89.48%
Drive current on each LED light source	53.1mA
Reported L_{80} lumen maintenance life	96000 hours

TM-21 Inputs

Instructions
Yellow fields are completed by the user. Fields not used should be left blank. Cyan fields are calculated based on user entries. First, enter a description of the LED light source tested. Then complete the fields labeled "LM-80 Testing Details". Test duration must be at least 6,000 hours. If only one case temperature data set is to be used (no interpolation), complete only "Tested case temperature 1". For only two case temperature data sets, complete 1 and 2. Next, further to the right, in the corresponding box(es) for each tested case temperature, enter the test data along with the time (in hours) at which each measurement was taken. Data entered must be normalized then averaged measured data (per TM-21 sections 5.2.1 and 5.2.2). If case temperatures have different test durations, enter data up to the lowest of the test durations for all of the case temperatures. Enter drive current, *in-situ* temperature data and the percentage of initial lumens to project to in the fields labeled "*In-Situ* Inputs". Results can be tailored to estimate lumen maintenance at a specific time by entering a value (t) in the yellow field. A complete TM-21 report will appear on the next tab labeled "Report".

Description of LED Light Source Tested (manufacturer, model, catalog number)
LUMILEDS L150-6580502400000

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):	17000
Tested drive current (mA):	60
Tested case temperature 1 (T_c, ºC):	70
Tested case temperature 2 (T_c, ºC):	85
Tested case temperature 3 (T_c, ºC):	105

In-Situ Inputs

Drive current for each LED package/array/module (mA):	53.1
In-situ case temperature (T_c, ºC):	71.4
Percentage of initial lumens to project to (e.g. for L_{70}, enter 70):	80

Results

Time (t) at which to estimate lumen maintenance (hours):	50,000
Lumen maintenance at time (t) (%):	89.48%
Reported L80 (hours):	96,000

LM-80 Test Inputs

Test Data for 70ºC Case Temperature		Test Data for 85ºC Case Temperature		Test Data for 105ºC Case Temperature	
Time (hours)	Lumen Maintenance (%)	Time (hours)	Lumen Maintenance (%)	Time (hours)	Lumen Maintenance (%)
1000	100.31%	1000	100.21%	1000	99.96%
2000	100.14%	2000	100.01%	2000	99.69%
3000	99.95%	3000	99.81%	3000	99.45%
4000	99.81%	4000	99.63%	4000	99.20%
5000	99.66%	5000	99.43%	5000	98.97%
6000	99.45%	6000	99.22%	6000	98.73%
7000	99.26%	7000	98.97%	7000	98.47%
8000	99.06%	8000	98.74%	8000	98.22%
9000	98.85%	9000	98.48%	9000	97.91%
10000	98.59%	10000	98.15%	10000	97.58%
11000	98.36%	11000	97.90%	11000	97.29%
12000	98.08%	12000	97.56%	12000	96.91%
13000	97.81%	13000	97.20%	13000	96.53%
14000	97.58%	14000	96.93%	14000	96.24%
15000	97.38%	15000	96.71%	15000	95.96%
16000	97.18%	16000	96.41%	16000	95.67%
17000	97.05%	17000	96.19%	17000	95.38%

TM-21 Report

Table 1: Report at each LM-80 Test Condition

Description of LED Light Source Tested (manufacturer, model, catalog number)	LUMILEDS L150-6580502400000

Test Condition 1 - 70ºC Case Temp		Test Condition 2 - 85ºC Case Temp		Test Condition 3 - 105ºC 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)	60	DUT drive current used in the test (mA)	60	DUT drive current used in the test (mA)	60
Test duration (hours)	17,000	Test duration (hours)	17,000	Test duration (hours)	17,000
Test duration used for projection (hour to hour)	8,000 - 17,000	Test duration used for projection (hour to hour)	8,000 - 17,000	Test duration used for projection (hour to hour)	8,000 - 17,000
Tested case temperature (ºC)	70	Tested case temperature (ºC)	85	Tested case temperature (ºC)	105
α	2.377E-06	α	2.980E-06	α	3.311E-06
B	1.009	B	1.011	B	1.009
Reported L80(17k) (hours)	98,000	Reported L80(17k) (hours)	79,000	Reported L80(17k) (hours)	70,000

Table 2: Interpolation Report (projection based on *in-situ* temperature entered)

$T_{s,1}$ (ºC)	70.00
$T_{s,1}$ (K)	343.15
α_1	2.377E-06
B_1	1.009
$T_{s,2}$ (ºC)	85.00
$T_{s,2}$ (K)	358.15
α_2	2.980E-06
B_2	1.011
E_a/k_b	1.85E+03
A	5.258E-04
B_0	1.010
$T_{s,i}$ (ºC)	71.40
$T_{s,i}$ (K)	344.55
α_i	2.429E-06
Reported L80(17k) at 71.4ºC (hours)	96,000

(TM-21 Output of L80)

4. Photos

4.1 Thermocouple contact photo of @ TEM_{LED}

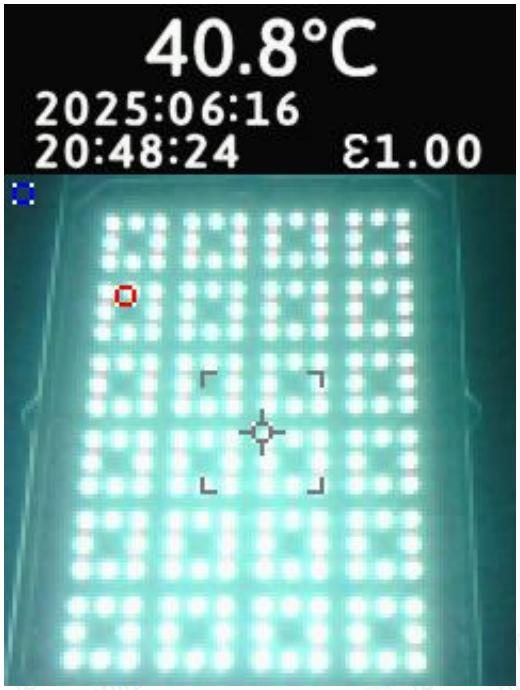

Photo 1

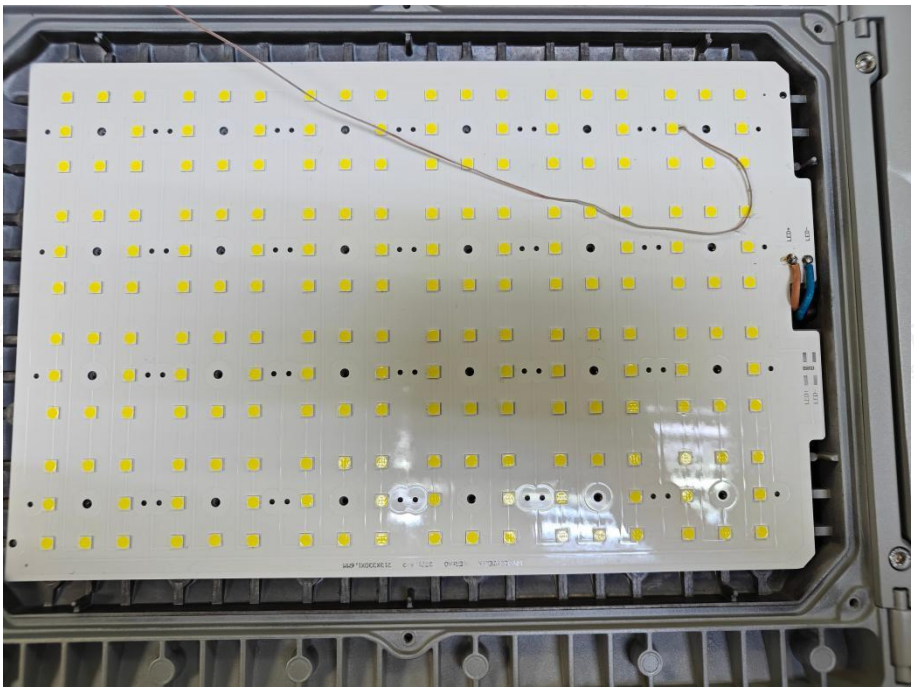

Photo 2

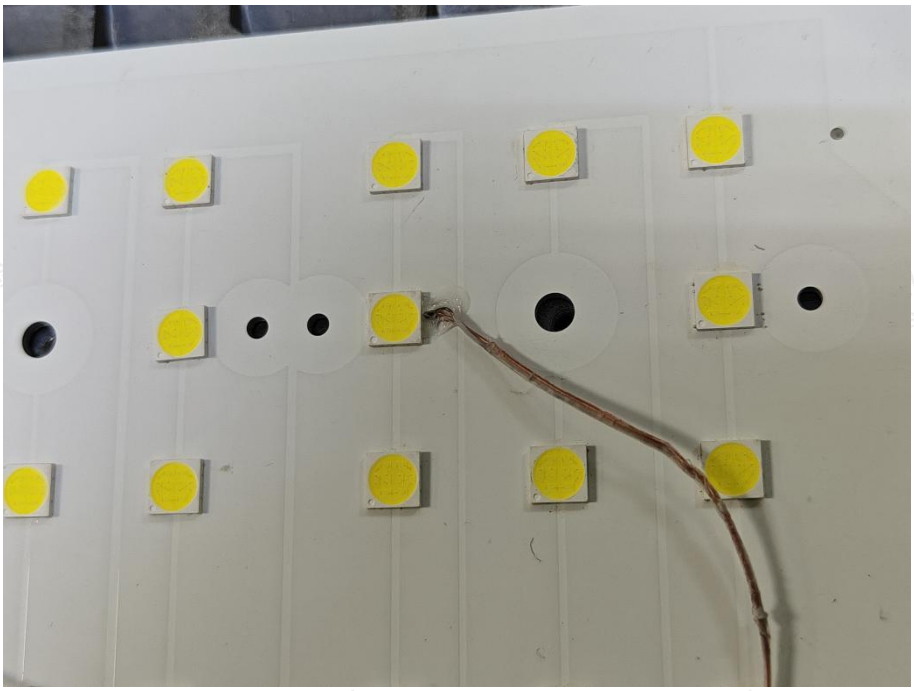

Photo 3

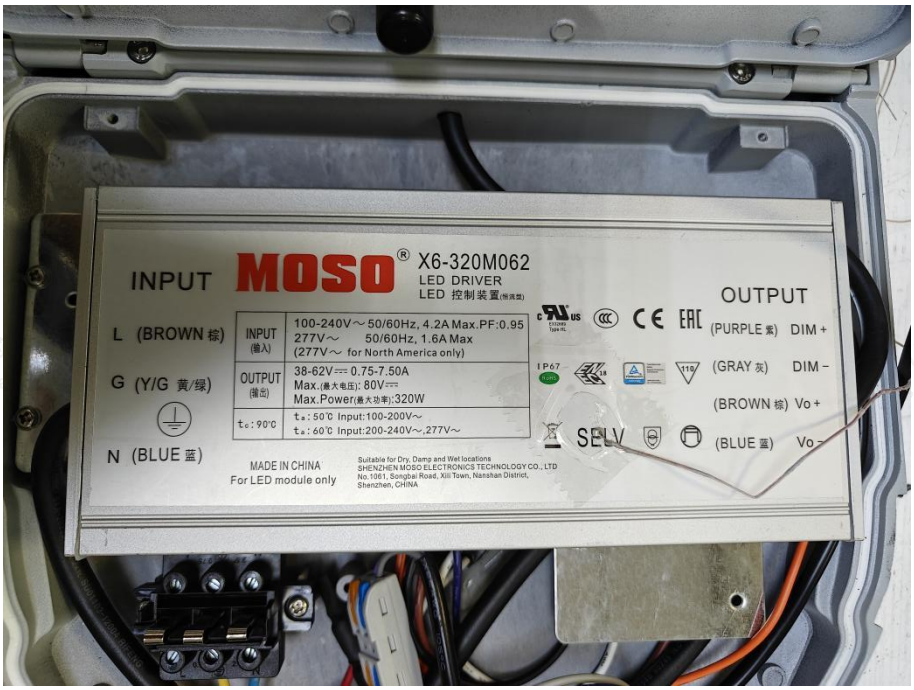

Photo 4

4.2 Product Photos

Photo 1

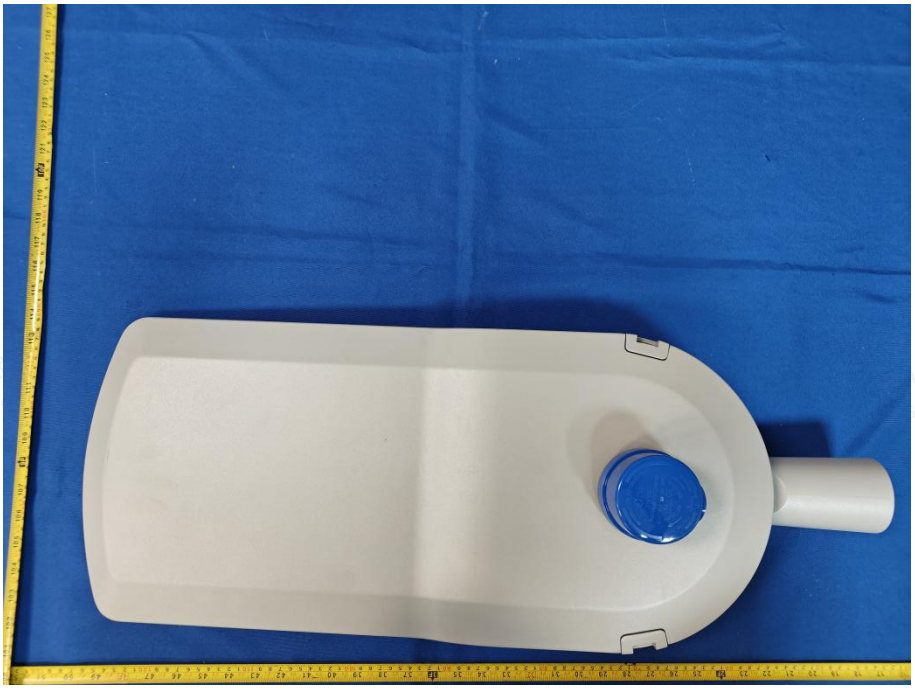

Photo 2

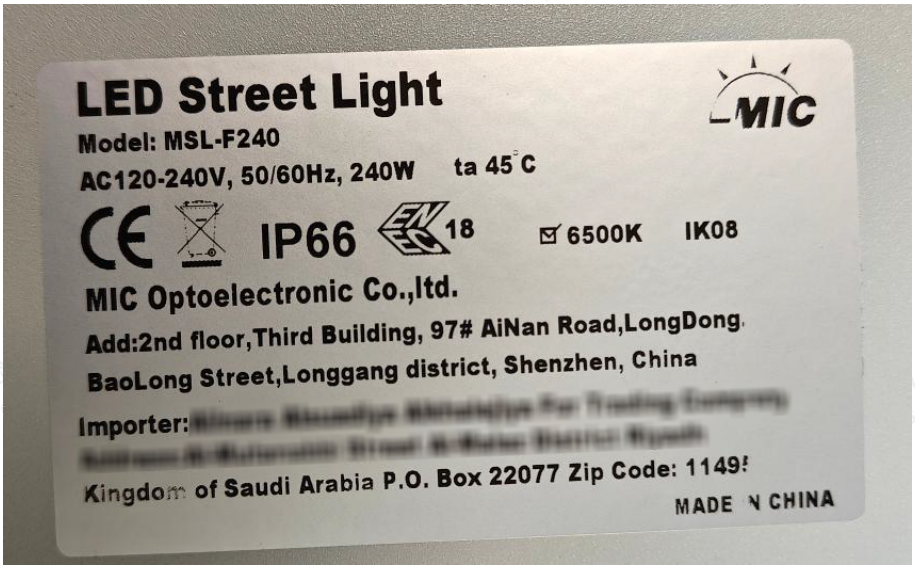

Photo 3 Label

---------- End of test report ----------