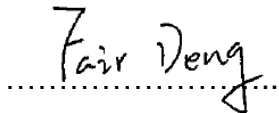
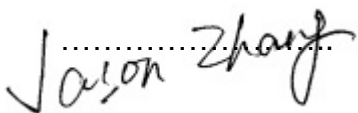



TEST REPORT	
Report Reference No.	: 4380928.59
Tested by (name + signature)	: Fair Deng 
Approved by (name + signature)	: Jason Zhang 
Date of issue	: 2021-11-11
Testing Laboratory	: DEKRA Testing and Certification (Shanghai) Ltd., Guangzhou Branch
Testing location / address	: Block 5, No. 3, Qiyun Road, Huangpu District, Guangzhou, Guangdong, China
Applicant	: AOK Industrial Company Limited
Address	: East Suite (2/F, Plant 4, St George's Science and Technology Industrial Park), 3/F, Building 1, St George's Science and Technology Industrial Park, North Side of Xinyu Road, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, China
Test specification	:
Standard Reference	: LM-82-12
Test object description	: LED Streetlight
Trade Mark	: 
Manufacturer	: Same as applicant
Factory	: Same as applicant
Model/Type reference	: AOK-580WiNM-NV-S5-00-4070-120D-P
Ratings	: 220-240 Vac, 50/60 Hz, 580 W

Test item particulars	:
LED Packages/Modules type	: S1W0-5050xxx06-00000000-00002
LED Packages/Modules number	: 468
LED Package/Modules supplier	: Seoul Semiconductor Co., LTD
Number of test objects	: 1 sample
Date of receipt of test item	: 2021-08-02
Date(s) of performance of tests	: 2021-08-02 to 2021-10-28

General remarks

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

This report shall not be reproduced, except in full, without the written approval of the Issuing Testing Laboratory, which will not be used for social proof function in China market.

The LED luminaire was tested as a lamp according to customer's request.

This report is basing on the original report 4379536.59(issued on 2021-10-13), it is issued as co-report.

Testing Summary

1. Room Temperature Initial Measurement
2. Room Temperature Calibration Measurement
3. Measurement at First Elevated Temperature
4. Measurement at Second Elevated Temperature

TEST METHOD

1.1 Seasoning in Sample Orientation - LED Products

No Seasoning was performed.

1.2 Room Temperature Initial Measurement

The sample was tested according to the IES LM-79-2008.

Photometric paramters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$.

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 rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm. Temperature of monitor points $T_{b,i}$, $T_{d,i}$ were recorded.

1.3 Room Temperature Calibration Measurement

The sample was tested with a device that controls the temperature T_b of the UUT, so that T_b is the same as the room temperature initial measurement.

Photometric parameters were measured using an environmental chamber, a spectroradiometer and software. The ambient temperature condition inside the chamber was set to control T_b

The sample was operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.

1.4 Measurement at First Elevated Temperature

The sample was tested with a device that controls the temperature T_b of the UUT, so that T_b reaches no lower than $T_b = T_{b,0} + 25^\circ\text{C}$.

Photometric parameters were measured using an environmental chamber, a spectroradiometer and software. The ambient temperature condition inside the chamber was set to control T_b

The sample was operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.

1.5 Measurement at Second Elevated Temperature

The sample was tested with a device that controls the temperature T_b of the UUT, so that T_b reaches no lower than $T_b = T_{b,0} + \Delta T$.

Photometric parameters were measured using an environmental chamber, a spectroradiometer and software. The ambient temperature condition inside the chamber was set to control T_b

The sample was operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.

Equipment List

Equipment name	TYPE	Manufacturer	Equipment ID No.
Digital power meter	PF2010A	EVERFINE	G/L 357
Digital CC&CV DC power supply	WY305	EVERFINE	G/L 358
Intelligent Pure Sine-wave Power Supply	TPS-500B	EVERFINE	G/L 359
Integrating sphere	2m	EVERFINE	G/L 1769
Plus UV-VIS-Near IR spectrophoto colorimeter	HAAS-2000	EVERFINE	G/L 1332-1
Standard Light Source	D204	EVERFINE	G/L 1220-2
Environmental Chamber	EL-10KA	ESPEC	G/L 466
AC Power Source	RP-2kVA	Jingjiu	G/L 576
Digital power meter	WT210	YOKOGAWA	G/L 1897
Data Logger	34970A	Agilent	G/L 441
Spectral Irradiance Colorimeter	SPIC-200	EVERFINE	G/L 1292

1. Room Temperature Initial Measurement $T_{b2} = 62,2\text{ }^{\circ}\text{C}$

Environmental Condition:

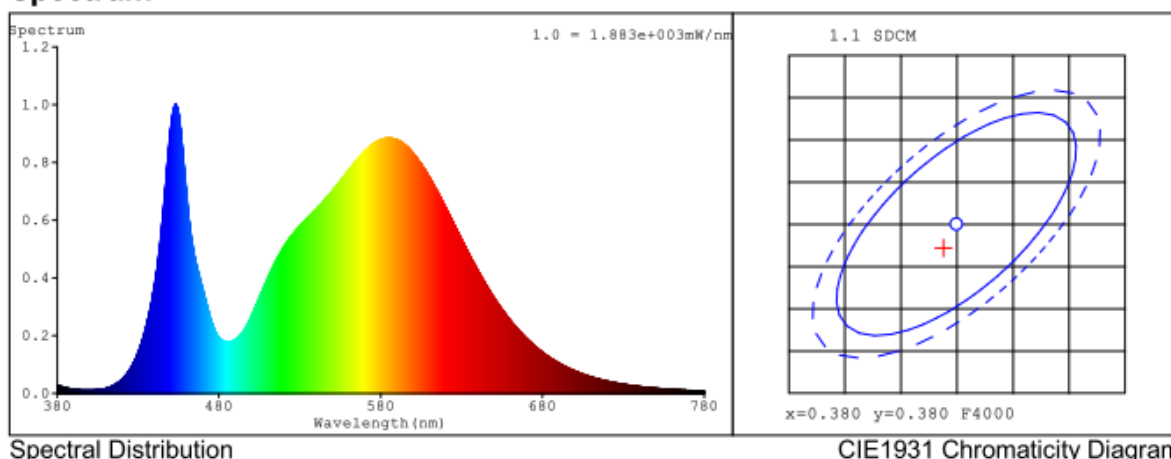
Temperature:	25,0°C
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Test Result:

Sample ID	Voltage (V ac)	Current (A)	Power Factor	Power (W)	Stabilization time (min)
004	230,0	2,510	0,994	573,8	180

Sample ID	Luminous Flux (lm)	Luminous Efficacy (lm/W)	CCT (K)
004	97013,9	169,04	4048

Spectrum



Spectral Distribution

CIE1931 Chromaticity Diagram

Colorimetric Parameters

Chromaticity Coordinate: $x = 0.3788$ $y = 0.3772$ / $u' = 0.2239$ $v' = 0.5015$ ($duv=6.83e-04$)

CCT= 4048K Prcp WL: $L_d=578.5\text{nm}$ Purity=26.9%

Peak WL: $L_p=453\text{nm}$ FWHM: $=20.7\text{nm}$ Ratio:R=16.7% G=80.3% B=3.1%

Render Index: $R_a = 73.7$

R1 =70 R2 =83 R3 =91 R4 =70 R5 =70 R6 =75 R7 =81

R8 =50 R9 =-32 R10=58 R11=65 R12=45 R13=73 R14=95 R15=63

LEVEL:OUT WHITE:ANSI_4000K

2. Room Temperature Calibration Measurement $T_{b2} = 62,2\text{ }^{\circ}\text{C}$

Environmental Condition:

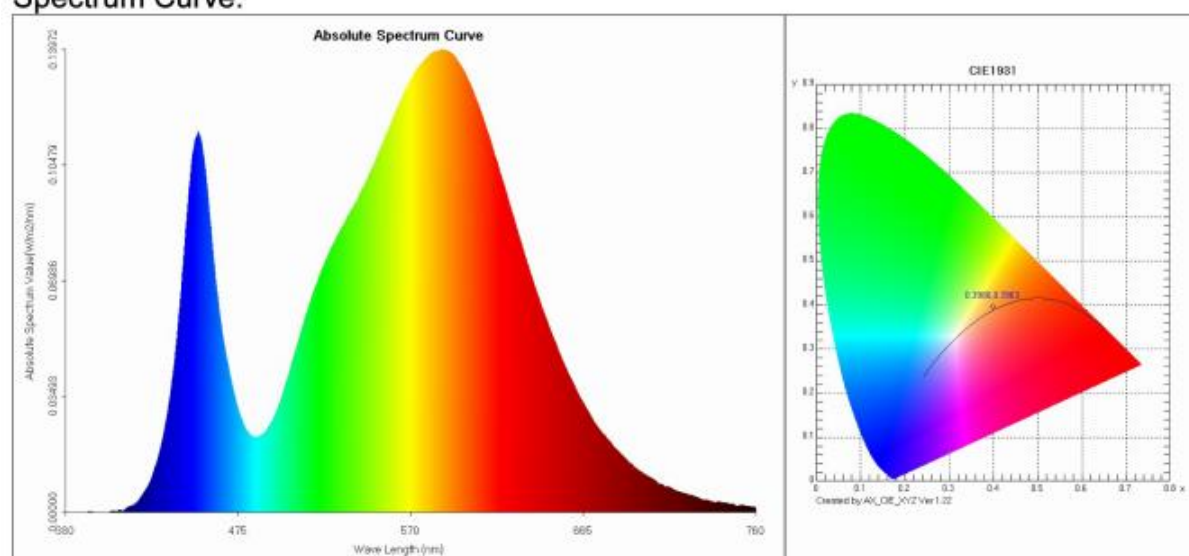
Temperature:	25,0°C
--------------	--------

Test Result:

Sample ID	Voltage (V ac)	Current (A)	Power Factor	Power (W)	Stabilization time (min)
004	230,0	2,482	0,996	571,8	180

Sample ID	Illuminance (lx)	Intensity (cd)
004	8529	1023

Spectrum Curve:



Test parameter:

E= 8528.99 lx

Ee=23.7292 W/m²

CIE x= 0.3986

CIE y= 0.3963

CIE u'=0.2291

CIE v'=0.5126

Tc=3694 K

Lp=587.0 nm

HW=118.5 nm

Ld=578.5 nm

Pur=38.6 %

Ratio_R=17.3 %

Ratio_G=80.2 %

Ratio_B=2.5 %

Duv=0.00399

S/P=1.45

Ra=70.7

R1= 66

R2= 80

R3= 92

R4= 66

R5= 66

R6= 72

R7= 79

R8= 44

R9= -45

R10= 54

R11= 61

R12= 41

R13= 69

R14= 96

R15= 58

3. Measurement at Temperature $T_{b2} = 69,9^{\circ}\text{C}$

Environmental Condition:

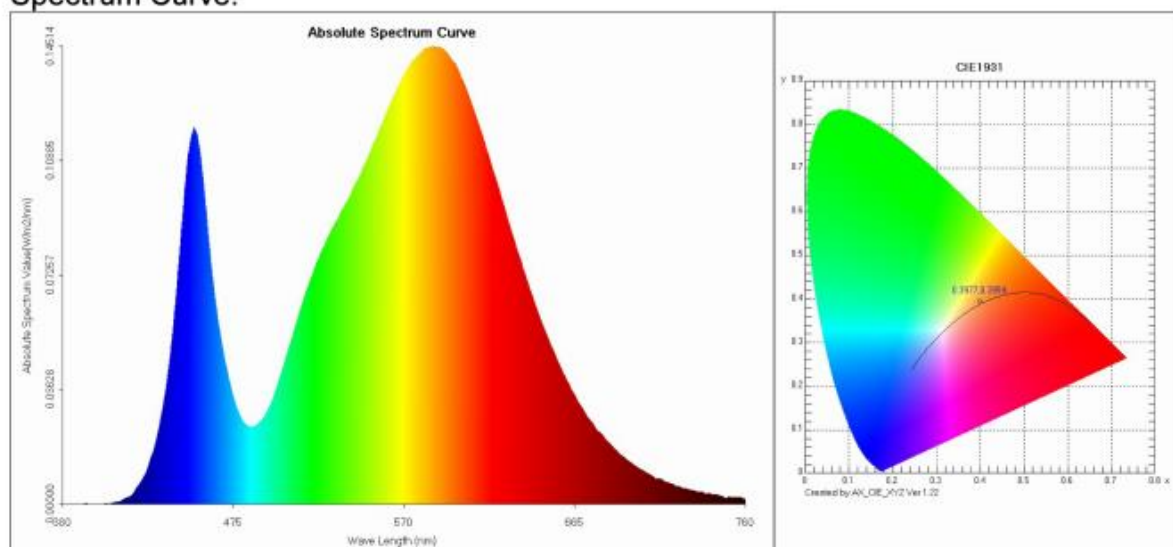
Temperature:	35,0°C
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Test Result:

Sample ID	Voltage (V ac)	Current (A)	Power Factor	Power (W)	Stabilization time (min)
004	230,0	2,477	0,996	570,3	180

Sample ID	Illuminance (lx)	Intensity (cd)
004	8136	976

Spectrum Curve:



Test parameter:

E= 8135.55 lx

Ee= 22.5144 W/m²

CIE x= 0.3977

CIE y= 0.3954

CIE u'=0.2289

CIE v'=0.5121

Tc=3708 K

Lp=587.0 nm

HW=118.6 nm

Ld=578.5 nm

Pur=38.0 %

Ratio_R=17.2 %

Ratio_G=80.2 %

Ratio_B=2.6 %

Duv=0.00382

S/P=1.46

Ra=70.8

R1= 66

R2= 81

R3= 92

R4= 66

R5= 66

R6= 72

R7= 79

R8= 44

R9=-45

R10= 54

R11= 60

R12= 41

R13= 69

R14= 96

R15= 58

4. Measurement at Temperature $T_{b2} = 89,4 \text{ }^{\circ}\text{C}$

Environmental Condition:

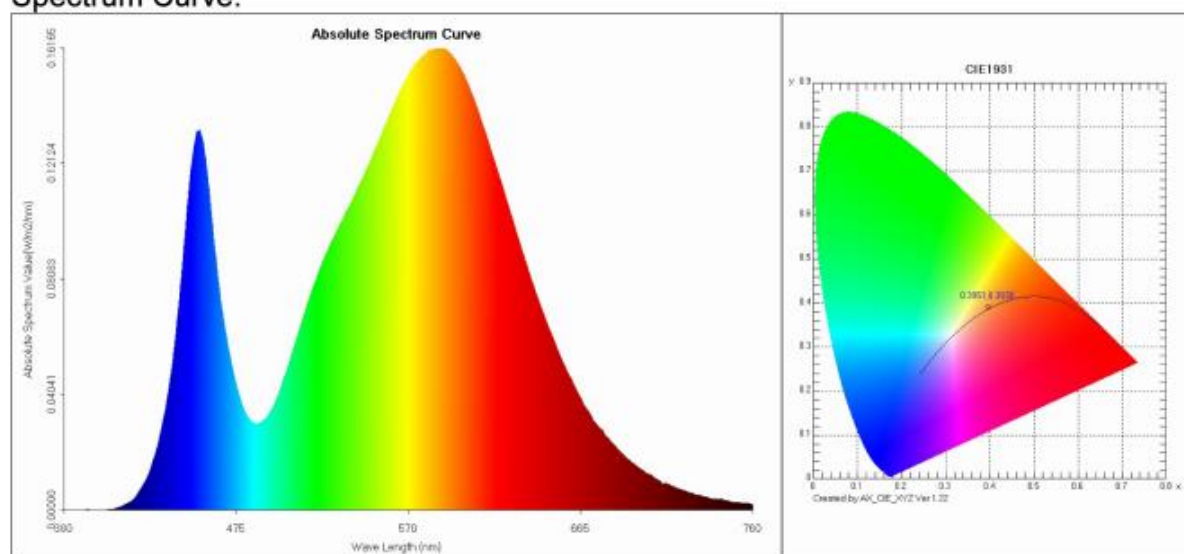
Temperature:	55,0°C
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Test Result:

Sample ID	Voltage (V ac)	Current (A)	Power Factor	Power (W)	Stabilization time (min)
004	230,0	2,466	0,996	567,6	180

Sample ID	Illuminance (lx)	Intensity (cd)
004	7318	878

Spectrum Curve:



Test parameter:

E= 7318.32 lx

Ee=20.1354 W/m²

CIE x= 0.3951

CIE y= 0.3930

CIE u'=0.2282

CIE v'=0.5107

Tc=3750 K

Lp=587.0 nm

HW=118.6 nm

Ld=578.5 nm

Pur=36.5 %

Ratio_R=17.2 %

Ratio_G=80.1 %

Ratio_B=2.8 %

Duv=0.00340

S/P=1.48

Ra=71.3

R1= 67

R2= 81

R3= 92

R4= 66

R5= 66

R6= 73

R7= 79

R8= 45

R9=42

R10= 56

R11= 60

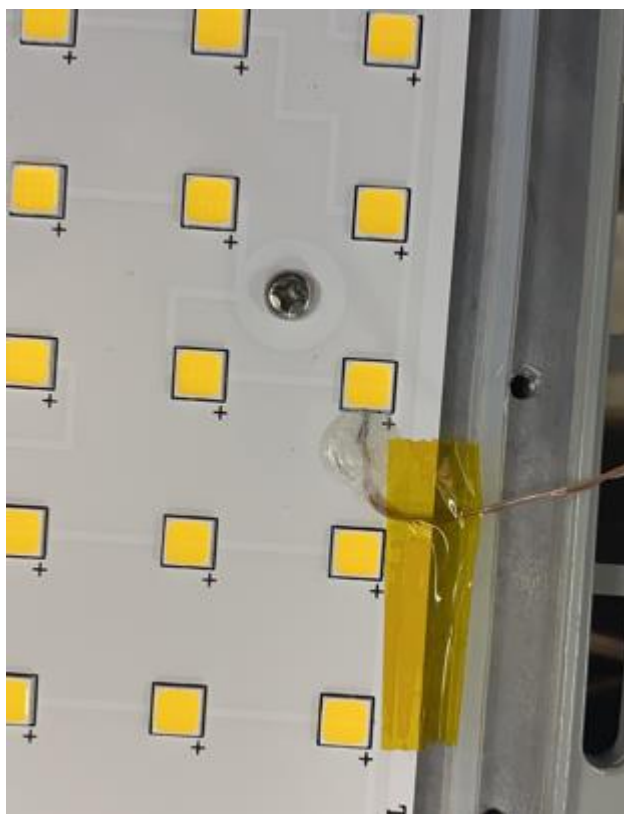
R12= 43

R13= 70

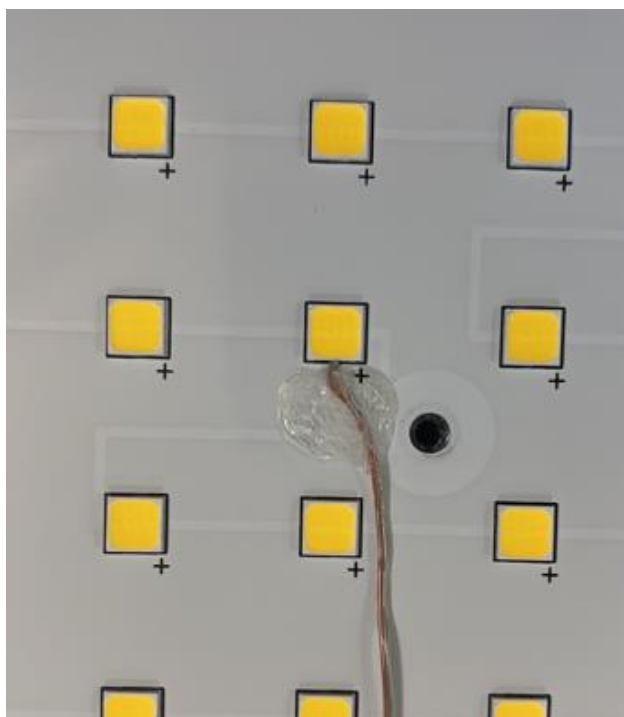
R14= 96

R15= 59

Tb location:



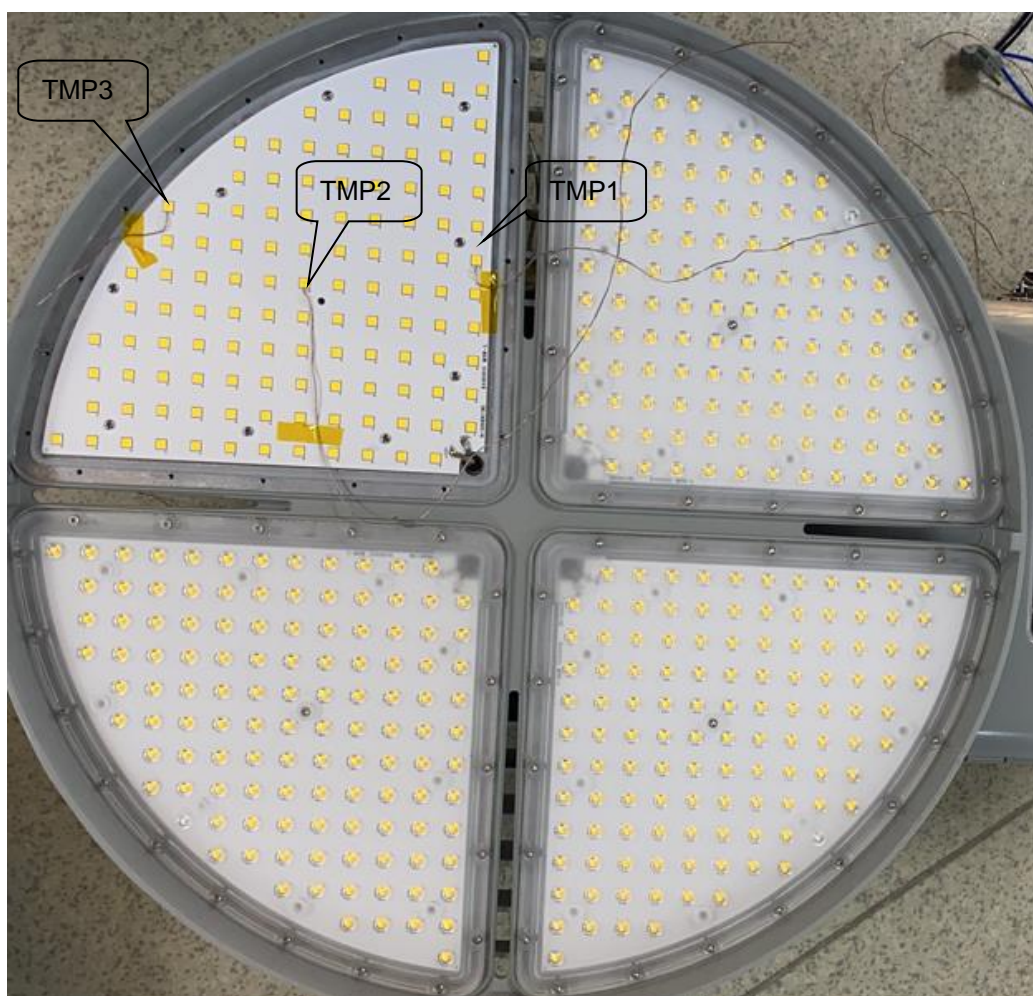
TMP 1 (Temperature measurement point of Tb1)



TMP 2 (Temperature measurement point of Tb2)



TMP 3 (Temperature measurement point of Tb3)



Td location:



LM-82 Test Result Summary

	Initial Temperature (Ta = 25°C)	First Elevated Temperature (Ta = 35°C)	Second Elevated Temperature (Ta = 55°C, relative humidity 95%)
Measured temperature of T _{b1} (°C)	62,9	69,9	89,6
Measured temperature of T _{b2} (°C)	62,2	69,9	89,4
Measured temperature of T _{b3} (°C)	62,1	69,7	89,3
Measured temperature of T _d (°C)	62,9	67,9	87,8
Input power (W)	573,8	572,3	569,6
Input voltage (V)	230,0	230,0	230,0
Input current (A)	2,510	2,486	2,475
Luminous flux (lm)	97013,9	92556,7	83263,1
Luminous efficacy (lm/W)	169,04	161,73	146,18
CIE chromaticity (u')	0,2239	0,2237	0,2230
CIE chromaticity (v')	0,5015	0,5010	0,4996
Correlated color temperature (K)	4048	4062	4104

Correction Factors			
P _i	573,8	P ₀	571,8
Φ _i	97013,9	I ₀	1023
u _i '	0,2239	u ₀ '	0,2291
v _i '	0,5015	v ₀ '	0,5126
CCT _i	4048	CCT ₀	3694
C _{power}	1,0035	C _{flux}	94,8327
Δu'	-0,0052	Δv'	-0,0111
ΔCCT	354		

RESULTS OF TESTS

Photometric and Electrical Measurements at 25°C

DEKRA Sample No.	Base Orientat ion	Input Voltage (Vac)	Input Current (mA)	Input Power (Watts)	Input Power Factor	Absolute Luminous Flux (Lumens)	Lumen Efficacy (Lumens/ Watt)
AOK-580WiNM-NV-S5-00-4070-120D-P							
1/1	--	230	2,510	573,8	0,994	97013,9	169,04

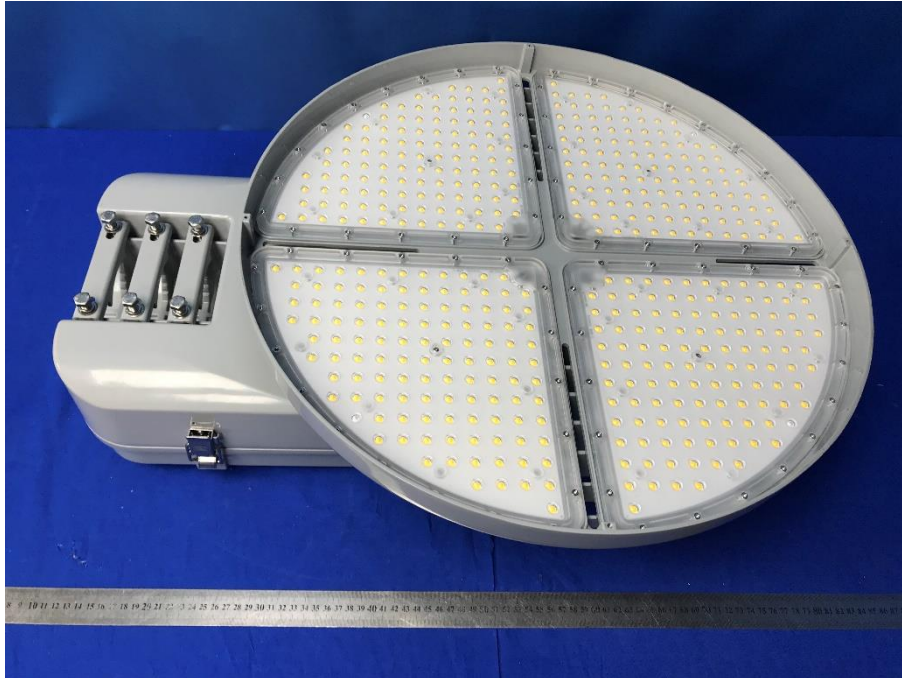
Photometric and Electrical Measurements at 35°C

DEKRA Sample No.	Base Orientat ion	Input Voltage (Vac)	Input Current (mA)	Input Power (Watts)	Input Power Factor	Absolute Luminous Flux (Lumens)	Lumen Efficacy (Lumens/ Watt)
AOK-580WiNM-NV-S5-00-4070-120D-P							
1/1	--	230	2,486	571,4	0,994	92556,7	161,73

Photometric and Electrical Measurements at 55°C, relative humidity 95%

DEKRA Sample No.	Base Orientat ion	Input Voltage (Vac)	Input Current (mA)	Input Power (Watts)	Input Power Factor	Absolute Luminous Flux (Lumens)	Lumen Efficacy (Lumens/ Watt)
AOK-580WiNM-NV-S5-00-4070-120D-P							
1/1	--	230	2,475	569,6	0,994	83263,1	146,18

Sample Photo



Overview



Overview

-END-