

TEST REPORT	
<b>Report Reference No.</b> .....	: 4380928.53
<b>Tested by (name + signature)</b> .....	: Fair Deng 
<b>Approved by (name + signature)</b> ....	: Jason Zhang 
<b>Date of issue</b> .....	: 2021-11-11
<b>Testing Laboratory</b> .....	: DEKRA Testing and Certification (Shanghai) Ltd. Guangzhou Branch
<b>Testing location / address</b> .....	: Block 5, No.3, Qiyun Road, Huangpu District, Guangzhou, Guangdong, China
<b>Applicant</b> .....	: AOK Industrial Company Limited
<b>Address</b> .....	: 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
<b>Test specification</b> .....	:
<b>Standard Reference</b> .....	: LM-79-08
<b>Test object description</b> .....	: LED Streetlight
<b>Trade Mark</b> .....	: 
<b>Manufacturer</b> .....	: Same as applicant
<b>Factory</b> .....	: Same as applicant
<b>Model/Type reference</b> .....	: AOK-580WiNM-NV-S5-00-4070-120D-P
<b>Ratings</b> .....	: 220-240 Vac, 50/60 Hz, 580 W
<b>Test item particulars</b> .....	:
<b>LED Packages/Modules type</b> .....	: S1W0-5050xxxx06-00000000-00002
<b>LED Packages/Modules number</b> .....	: 468
<b>LED Package/Modules supplier</b> .....	: Seoul Semiconductor Co., LTD
<b>Number of test objects</b> .....	: 1 sample
<b>Date of receipt of test item</b> .....	: 2021-08-02
<b>Date(s) of performance of tests</b> .....	: 2021-08-02 to 2021-10-28
<b>General remarks</b>	
<p>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.</p> <p>The test results presented in this report relate only to the object tested.</p> <p>This report shall not be reproduced, except in full, without the written approval of the Issuing Testing Laboratory. This report will not be used as social proof function in China market.</p> <p>This report is basing on the original report 4379536.53 (issued on 2021-10-13), it is issued as co-report.</p>	

## **Testing Summary**

1. Integrating sphere Test
2. Goniophotometer Test

## **TEST METHOD**

### **1.1 Seasoning in Sample Orientation - LED Products**

No Seasoning was performed in accordance with IESNA LM-79-08

### **1.2 Light Output and Light Distribution Measurements**

Light Output and Light Distribution were measured using a Everfine Go-R5000 Goniophotometer. The lamp rotates only around the fixed vertical axle in the prescribed burning position and a reflecting mirror rotates around the horizontal axle, meanwhile, the mirror in the opposite side reflect the measured beam perpendicularly towards to a fixed detector at the horizontal rotation axis. The combined motion of the lamp and mirror permit the measurement of luminous intensity at the direction of any horizontal or vertical angle without tilting the lamp. The lamp was allowed to stabilize before measurements were made. The calibration of the Goniophotometer system is by the reference/standard lamps which are traceable to NIM.

Electrical measurements including voltage, current, power and power factor were measured using the Everfine Model PF2010A.

### **1.3 Color Performance**

Color Performance was measured using an Everfine 2 m Integrating Sphere Unit at the ambient temperature of  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . Temperature was measured at the same height as the sample inside the sphere.

Correlated color temperature and color rendering index was measured using an Everfine Model HAAS-2000 Spectrophotometer attached to the detector port of the integrating sphere and it was calculated from the spectral radiant flux measurements taken over the range 380 to 780 nm. The calibration of the integrating sphere spectrometer system is by the reference/standard luminaires which are traceable to NIM.

Electrical measurements including voltage, current, power and power factor were measured using the Everfine Model PF2010A.

Self-absorption factor of integrating sphere was considered during the testing.

**Equipment List**

<b>Equipment name</b>	<b>TYPE</b>	<b>Manufacturer</b>	<b>Equipment ID No.</b>
Digital Power Meter	PF2010A	EVERFINE	G/L 1161
AC power source	DPS1060	EVERFINE	G/L 1160
Goniophotometers	GO-R5000-SML	EVERFINE	G/L 1158
Goniophotometer controller	CT400	EVERFINE	G/L 1162
High-accuracy digital photometer head(f1&f2)	ID-1000	EVERFINE	G/L 1158/1
High-accuracy digital photometer head(f1)	ID-1000	EVERFINE	G/L 1158/2
High accuracy array spectroradiometer	HAAS-2000	EVERFINE	G/L 1158/3
Standard light source	D908	EVERFINE	G/L 1164/1
Digital CC&CV DC power supply	WY12010	EVERFINE	G/L 1159
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 1332
spectroradiometer	HAAS-2000	EVERFINE	G/L 1332-1
Standard Light Source	D204	EVERFINE	G/L 1220-2

## 1. Integrating Sphere Test

### Environmental Condition:

Temperature:	24,7°C
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### Test Result:

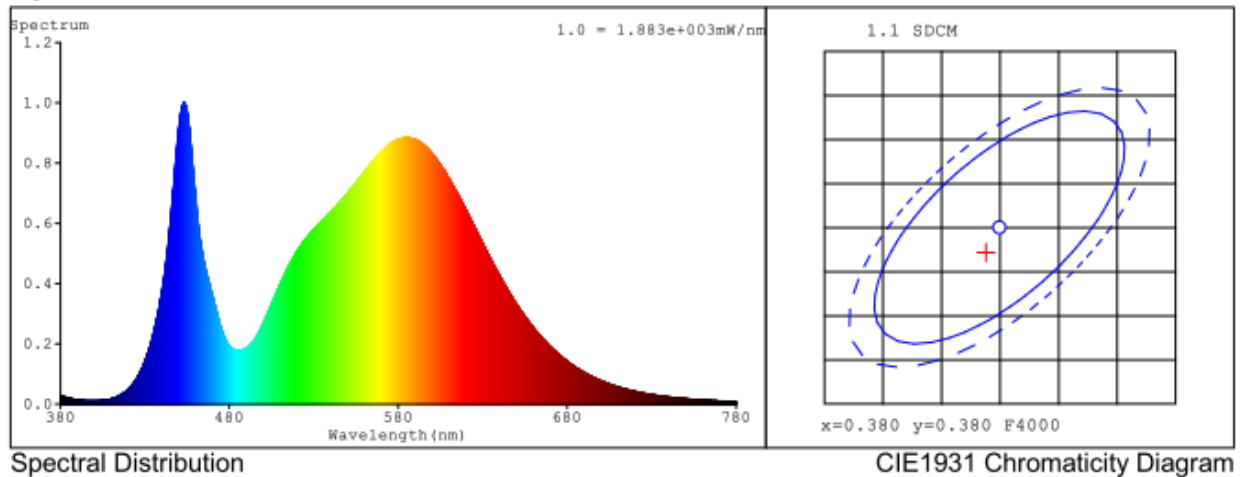
Sample ID	Voltage (V ac)	Frequency (Hz)	Current (A)	Power Factor	Power (W)	Stabilization time (min)
004	230,0	50	2,501	0,995	572,8	180

Sample ID	CCT (K)	Ra
004	4048	73,7

Orientation of installation: Downward Light

Operation time: 210 min

### Spectrum



### Colorimetric Parameters

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

CCT= 4048K Prcp WL:  $L_d=578.5nm$  Purity=26.9%

Peak WL:  $L_p=453nm$  FWHM:  $\approx 20.7nm$  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.Goniophotometer Test

### Environmental Condition:

Temperature:	24,7°C
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### Test Result:

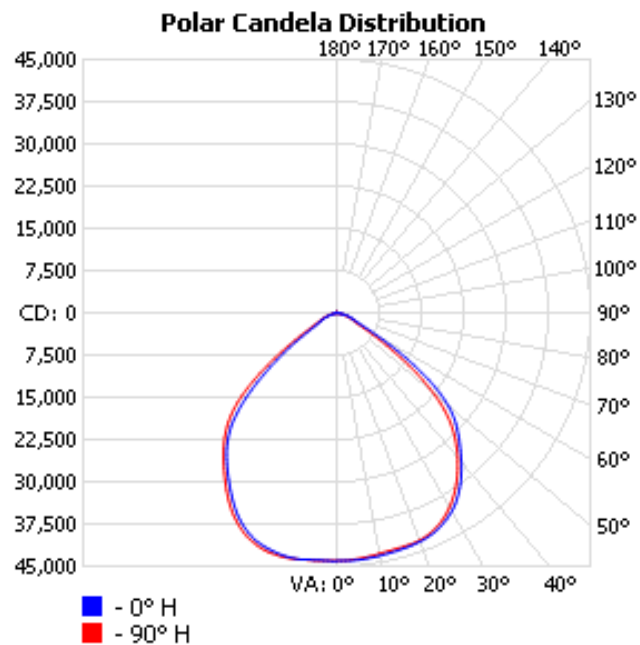
Sample ID	Voltage (V ac)	Frequency (Hz)	Current (A)	Power Factor	Power (W)	Stabilization time (min)
004	230,0	50	2,510	0,994	573,8	180

Sample ID	Flux (lm)	Field Angle		Beam Angle		Zonal Lumen	Luminous Efficacy (lm/W)
		Horizontal Spread	Vertical Spread	Horizontal Spread	Vertical Spread	0~60°	
004	97013,9	124,3	124,0	98,8	97,3	93,9%	169,04

Orientation of installation: Downward Light

Operation time: 210 min

### Light Distribution

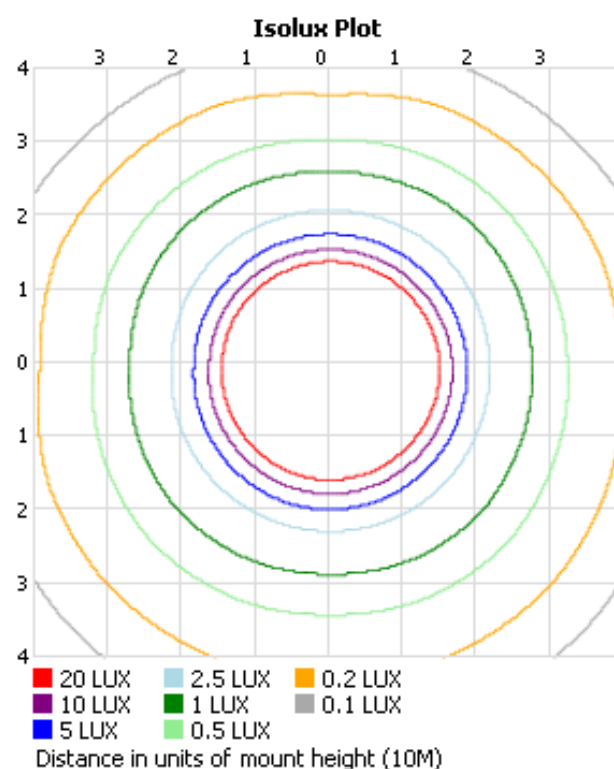


**Zonal Lumen**

<b>Zonal Lumen Summary</b>		
Zone	Lumens	% Luminaire
0-30	35,558.6	36.7%
0-40	58,178.6	60%
0-60	91,098.7	93.9%
60-90	5,915.2	6.1%
70-100	2,084.7	2.1%
90-120	0	0%
0-90	97,013.9	100%
90-180	0	0%
0-180	97,013.9	100%

<b>Lumens Per Zone</b>					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-5	1,051.7	1.1%	90-95	0	0%
5-10	3,141.9	3.2%	95-100	0	0%
10-15	5,185.2	5.3%	100-105	0	0%
15-20	7,122.1	7.3%	105-110	0	0%
20-25	8,842.2	9.1%	110-115	0	0%
25-30	10,215.5	10.5%	115-120	0	0%
30-35	11,125.0	11.5%	120-125	0	0%
35-40	11,495.0	11.8%	125-130	0	0%
40-45	11,186.4	11.5%	130-135	0	0%
45-50	9,920.3	10.2%	135-140	0	0%
50-55	7,446.8	7.7%	140-145	0	0%
55-60	4,366.4	4.5%	145-150	0	0%
60-65	2,288.9	2.4%	150-155	0	0%
65-70	1,541.7	1.6%	155-160	0	0%
70-75	1,095.7	1.1%	160-165	0	0%
75-80	652.1	0.7%	165-170	0	0%
80-85	281.8	0.3%	170-175	0	0%
85-90	55.2	0.1%	175-180	0	0%

### ISO Lux Diagram



### Illuminance at a Distance

Illuminance at a Distance			
	Center Beam LUX	Beam Width	
1.67M	15,833 LUX	3.72 M	3.93 M
3.33M	3,958 LUX	7.44 M	7.86 M
5.00M	1,761 LUX	11.16 M	11.78 M
6.67M	990 LUX	14.88 M	15.72 M
8.33M	634 LUX	18.60 M	19.65 M
10.00M	440 LUX	22.32 M	23.58 M

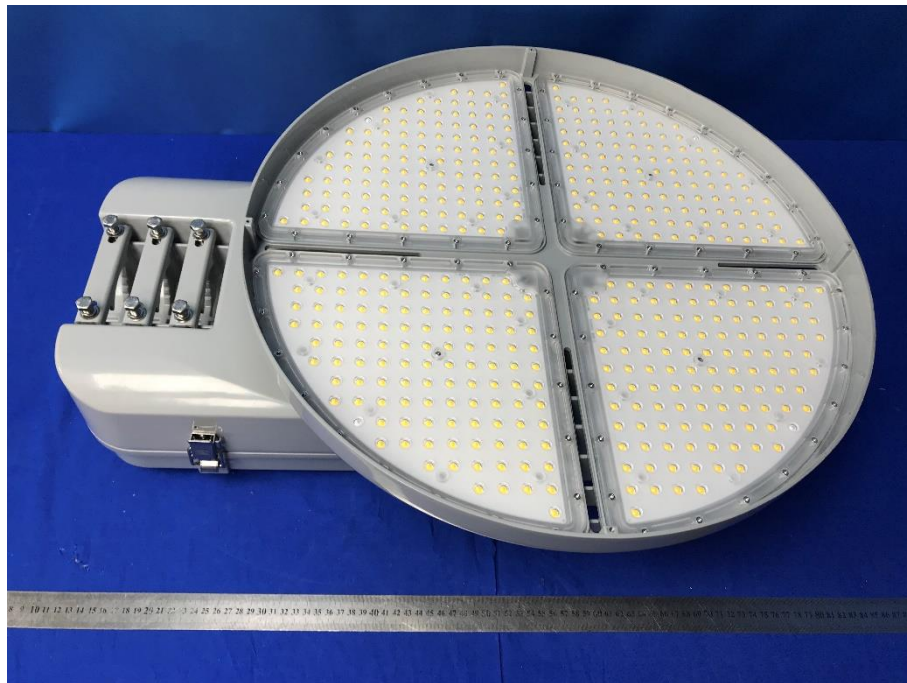
■ Vert. Spread: 96.3°  
■ Horiz. Spread: 99.4°

### Luminous Intensity Distribution Data

Candela Table - Type C																	
y/C	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	44013	44013	44013	44013	44013	44013	44013	44013	44013	44013	44013	44013	44013	44013	44013	44013	44013
1	44014	44019	43983	43970	44001	43986	44023	44010	44023	44014	44009	44039	44020	44035	44053	44016	44014
2	44013	43994	43957	43914	43968	43933	43973	43983	43996	44026	44033	44069	44026	44035	44070	44042	44013
3	44017	44000	43922	43848	43911	43873	43929	43958	43994	44050	44054	44102	44052	44056	44064	44040	44017
4	44020	43963	43876	43780	43843	43812	43885	43933	43992	44079	44081	44139	44073	44067	44101	44064	44020
5	44008	43926	43825	43695	43787	43732	43837	43917	44012	44118	44145	44175	44086	44077	44096	44038	44008
6	43968	43884	43741	43622	43701	43669	43804	43927	44056	44155	44178	44228	44108	44070	44086	44014	43968
7	43914	43820	43650	43520	43625	43609	43781	43944	44123	44180	44216	44277	44144	44093	44084	43980	43914
8	43862	43756	43577	43427	43555	43528	43730	43938	44177	44211	44203	44307	44193	44132	44081	43954	43862
9	43820	43669	43467	43338	43466	43440	43666	43936	44213	44229	44200	44333	44261	44182	44069	43912	43820
10	43773	43573	43369	43222	43366	43326	43571	43918	44207	44227	44187	44341	44311	44237	44062	43861	43773
15	43487	43150	42788	42923	43144	42809	43133	43557	43771	43886	43981	44233	44209	44274	43863	43529	43487
16	43450	43064	42647	42868	43115	42706	42999	43390	43612	43692	43854	44139	44127	44198	43764	43454	43450
17	43396	42974	42483	42821	43096	42602	42855	43226	43452	43476	43723	44015	43999	44069	43677	43372	43396
18	43322	42839	42323	42682	43076	42494	42658	43040	43247	43226	43536	43846	43821	43877	43522	43239	43322
19	43255	42680	42155	42547	43031	42395	42475	42845	43016	42973	43314	43642	43601	43683	43380	43097	43255
20	43188	42515	42003	42422	42941	42269	42264	42622	42748	42688	43048	43400	43345	43433	43190	42958	43188
25	42367	41678	41225	41465	41907	41158	40868	40719	40596	40703	41273	41629	41428	41759	41913	42106	42367
30	40711	40217	40014	39728	39888	39315	38922	37774	37372	37947	38823	38774	38410	39219	40086	40399	40711
35	37995	38079	38108	37097	36934	36547	35914	34424	33865	34475	35309	35266	34816	36102	37642	37855	37995
40	34361	34953	35138	33754	33327	32597	31595	30615	30282	30112	30509	31358	31258	32559	34131	34463	34361
45	30494	30799	30534	29556	29017	27217	25871	25272	25047	24301	24623	26152	27212	28103	29251	30170	30494
50	25970	25343	24298	23616	22810	20202	18235	17559	16939	16692	17230	19188	20724	21966	22944	24656	25970
55	18373	17830	16381	15318	13902	11739	10200	9321	8886	9002	9580	10962	12027	13919	15361	17226	18373
60	9379	9149	8295	7209	6308	5350	4710	4394	4262	4332	4612	5161	5629	6684	7843	8875	9379
65	4388	4312	4152	3779	3493	3369	3267	3046	2914	3045	3189	3285	3314	3717	4044	4231	4388
70	2933	3030	3027	2745	2519	2481	2353	2122	1962	2148	2334	2432	2378	2681	2930	2966	2933
75	2001	2081	2023	1764	1520	1492	1368	1257	1025	1285	1406	1538	1463	1796	2013	2069	2001
80	1062	1211	1133	987	689	738	566	522	405	554	614	795	668	1036	1158	1218	1062
85	431	520	415	330	201	111	66	58	54	59	75	158	204	367	418	512	431
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
135	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



**Sample Photo**



Overview



Overview

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