

## LM-79-08 Test Report

For

### AOK LED Light Company Limited

(Brand Name: AOK)

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 ,Shenzhen, Guangdong 518125 China

### Outdoor Pole/Arm-Mounted Area and Roadway Luminaires

Model name(s):

AOK-150WPLA-HVS-L2-[00;PH;PIR]-5070-T3-[A;B;C;D;E;F;G]

Remark: The [00;PH;PIR] represents type of Sensor, can be 00=Without Sensor;  
PH=Photocell; PIR=PIR sensor. The [A;B;C;D;E;F;G] represents mounting option  
which can be as following: A=Slip Fitter; B=Adjustable table; C=Yoke; D=Slide &  
Lock; E=Square Pole; F= Round Pole; G=Trunnion.

Representative (Tested) Model:

AOK-150WPLA-HVS-L2-00-5070-T3-E

Model Different: N/A

Test & Report By:

*Ferrum Li*

Engineer: Ferrum Li

Date: Feb,17,2023

Review By:

*Garman Mo*

Manager: Garman Mo

Note: 1.The results contained in this report pertain only to the tested samples.

2.This report does not imply product certification, approval, or endorsement by A2LA, or any  
agency of the Federal Government.

**Laboratory: STANDARD-TECH TESTING SERVICES**

Report Format Number STD-QP019-409-B/0

Address: Standard-Tech Building, No.6 Guanhong Road,Guangzhou Science City, Guangzhou 510663, China

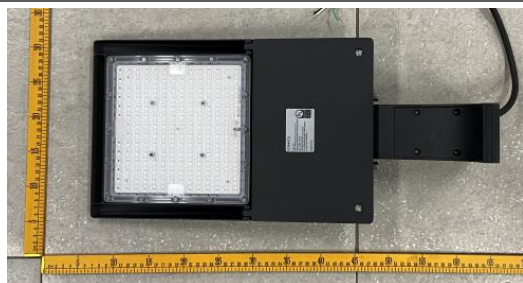
Tel: 8620-3229 0320

Fax: 8620-32290422

<http://www.standard-tech.com>

**1.1 Product Information:**

Organization Name	AOK LED Light Company Limited	
Brand Name	AOK	
Model Number	AOK-150WPLA-HVS-L2-[00;PH;PIR]-5070-T3-[A;B;C;D;E;F;G]	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Outdoor Pole/Arm-Mounted Area and Roadway Luminaires	
Rated Voltage / Frequency	277-480Vac, 50/60Hz	
Nominal Power	150W	
Rated Initial Lamp Lumen	--	
Declared CCT	5000K	
LED Manufacturer	Lumileds Holding B.V.	
LED Model	L128-5070RB35000G1	
Integral Controls Availability	Yes	
Dimming	Continuous	
Sample Number	JAE230102-A1	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

**Photo**


**1.2 Test Specifications:**

Date of Receipt	Feb.14,2023
Date of Test	Feb.16,2023
Test item	<ol style="list-style-type: none"> <li>1. Total Luminous Flux</li> <li>2. Luminous Distribution Intensity</li> <li>3. Luminous Efficacy</li> <li>4. Correlated Color Temperature</li> <li>5. Color Rendering Index</li> <li>6. Chromaticity Coordinate</li> <li>7. Electrical Parameters</li> </ol>
Reference Standard	<ol style="list-style-type: none"> <li>1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products</li> <li>2. ANSI C78.377-2017 Specifications for the Chromaticity of Solid State Lighting Products</li> <li>3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</li> <li>4. CIE 15-2004 Technical Report Colorimetry</li> <li>5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source</li> <li>6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems</li> </ol>

**1.3 Test Methods****1) Photometric and Light Distribution Measurement – Goniophotometer Method:**

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , measured at a point not more than 1 m from the sample and at the same height as the sample. The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  horizontal intervals.

**2) Chromaticity Measurement – Sphere-Spectroradiometer Method:**

Chromaticity parameters 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 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral power distribution taken at 5 nm intervals over the range of 380 to 780 nm.

**3) Electrical Measurements:**

Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . The sample was operated at 120 or rated Volts AC, 60Hz. It was stabilized before measurement was made. Voltage, frequency, current, power, power factor and total harmonic distortion were measured by and read from the power meter.

**2.1 Electrical, Photometric and Chromaticity Measurements**

<b>Test date</b>	2023-02-16	<b>Test Ambient:</b>	25±1 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	60
<b>Model Number</b>	AOK-150WPLA-HVS-L2-00-5 070-T3-E	<b>Total Operating Time (min)</b>	75

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE230102-	277.2	60	0.5351	148.1	0.9987	3.32
A1	480.0	60	0.3139	145.9	0.9684	4.33
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

**Photometric Measurement – Goniophotometer Method(Test Distance: 26.000m):**

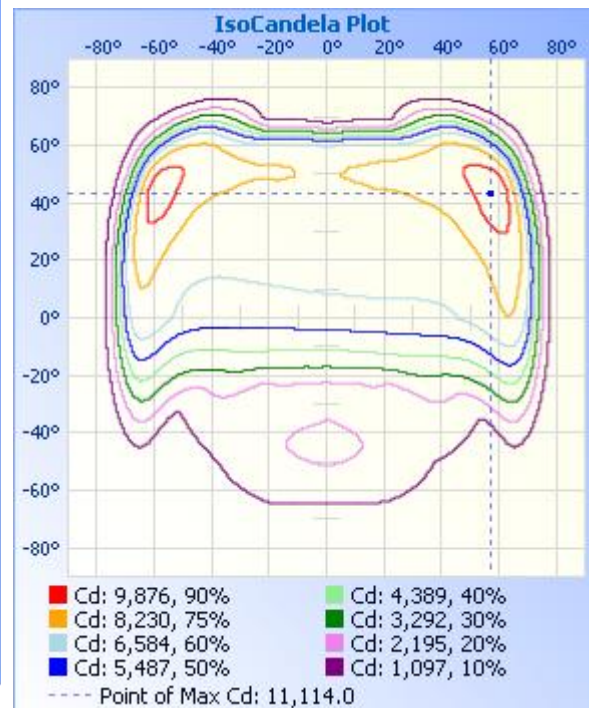
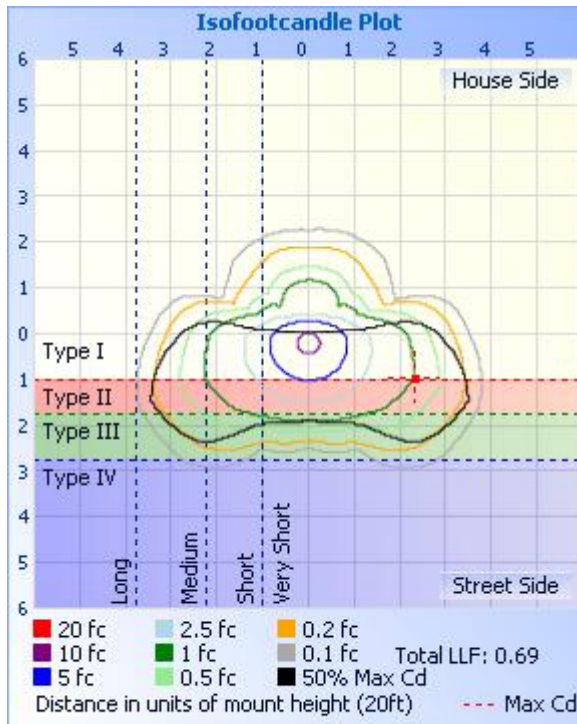
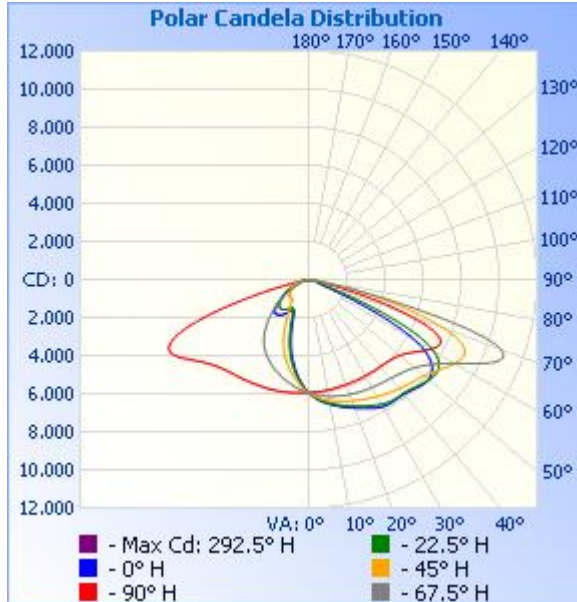
Parameter	Result		DLC V5.1 Pass Criteria	
Test Voltage (V)	277	480	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	23095	22534	>=1000(-10%)	
Luminous Efficacy (lm/W)	155.93	154.44	Standard: >= 105(-3%)	Premium: >= 120(-3%)
Zonal lumens in the0-90° zone (%)	99.6	--	100(-1)	
Zonal lumens in the80-90° zone (%)	0.9	--	<=10(+3)	
BUG Ratings	B3-U3-G3	--	--	
Beam Angle (°)	111.8	--	--	
Center Beam Candle Power (cd)	5930	--	--	

**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	4,530.8	19.6%
0-40	7,717.9	33.5%
0-60	16,289.8	70.6%
60-90	6,699.8	29%
70-100	2,206.8	9.6%
90-120	30.8	0.1%
0-90	22,989.7	99.6%
90-180	81.0	0.4%
0-180	23,070.7	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	557.4	2.4%	90-100	5.9	0%
10-20	1,575.0	6.8%	100-110	11.3	0%
20-30	2,398.4	10.4%	110-120	13.7	0.1%
30-40	3,187.1	13.8%	120-130	14.8	0.1%
40-50	3,951.7	17.1%	130-140	12.1	0.1%
50-60	4,620.3	20.0%	140-150	9.4	0%
60-70	4,498.9	19.5%	150-160	7.1	0%
70-80	1,994.0	8.6%	160-170	4.7	0%
80-90	206.9	0.9%	170-180	2.1	0%

## Photometric Data



Laboratory: STANDARD-TECH TESTING SERVICES

Report Format Number STD-QP019-409-B/0

Address: Standard-Tech Building, No.6 Guanhong Road, Guangzhou Science City, Guangzhou 510663, China

Tel: 8620-3229 0320

Fax: 8620-32290422

<http://www.standard-tech.com>

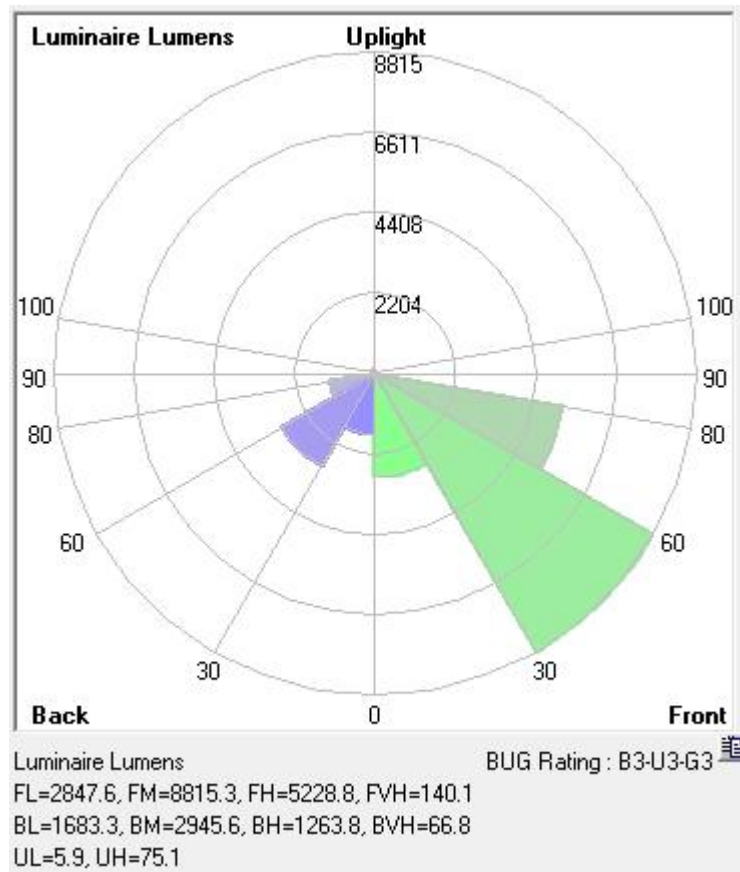


Table--1

UNIT: X10cd

C (DEG) γ (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	
0	593	593	593	593	593	593	593	593	593	593	593	593	593	593	593	593	
5	596	614	626	634	636	633	623	608	591	571	549	534	530	536	552	575	
10	602	633	652	664	666	659	645	623	589	546	497	463	451	466	503	555	
15	606	649	675	692	692	683	662	632	586	518	439	381	360	383	447	532	
20	610	664	697	718	717	707	677	641	585	488	375	284	254	286	383	506	
25	614	677	718	743	746	731	693	649	585	457	295	199	184	199	304	479	
30	620	689	736	770	772	757	710	656	586	423	215	172	187	170	222	447	
35	628	702	756	784	779	773	727	665	589	382	162	192	220	187	164	410	
40	637	716	773	791	784	778	745	675	592	330	139	211	242	205	136	359	
45	655	738	792	809	804	796	764	692	601	265	139	217	248	211	135	298	
50	686	775	818	834	820	822	788	721	621	200	135	206	228	202	131	233	
55	738	837	862	838	792	830	830	777	666	142	124	174	182	173	121	171	
60	803	941	912	767	660	764	883	882	734	92.1	109	143	141	141	107	112	
65	806	1076	928	485	293	498	905	1037	765	60.5	93.0	113	101	111	93.6	63.1	
70	597	1076	773	116	63.6	121	768	1076	587	43.2	96.4	84.7	71.5	83.7	94.4	42.7	
75	213	572	420	46.5	46.8	47.0	430	558	217	31.7	60.0	56.3	48.8	56.3	57.6	31.4	
80	38.4	110	107	39.6	48.0	39.6	107	106	39.6	21.1	30.8	29.5	23.6	29.3	30.7	21.0	
85	9.49	24.2	21.4	21.4	16.8	23.1	21.2	22.4	9.31	32.9	10.5	8.65	4.70	8.42	10.4	32.6	
90	0.40	0.56	0.60	0.21	0.10	0.17	0.85	0.83	0.35	0.58	0.44	0.04	0.03	0.04	0.46	0.66	
95	1.01	0.17	0.30	0.13	0.08	0.11	0.24	0.20	0.65	1.44	1.05	0.10	0.06	0.11	1.07	1.43	
100	1.92	0.12	0.26	0.14	0.11	0.14	0.23	0.14	1.24	2.24	1.70	0.48	0.25	0.52	1.70	2.23	
105	2.42	0.16	0.24	0.20	0.17	0.19	0.23	0.25	1.76	2.52	1.95	1.03	0.70	1.07	1.98	2.46	
110	2.64	0.38	0.24	0.31	0.35	0.32	0.24	0.49	2.07	2.63	1.94	1.23	1.08	1.28	2.00	2.59	
115	2.63	0.60	0.28	0.37	0.43	0.38	0.27	0.74	2.10	2.84	2.36	1.27	1.26	1.37	2.30	2.60	
120	2.63	0.80	0.34	0.43	0.49	0.40	0.35	0.92	2.09	3.09	2.74	1.99	1.61	1.98	2.43	2.60	
125	2.61	1.00	0.37	0.65	0.83	0.64	0.38	1.11	2.09	3.00	2.32	2.38	2.25	2.38	2.26	2.60	
130	2.62	1.20	0.37	0.64	0.84	0.66	0.38	1.31	2.17	2.19	2.22	2.54	2.53	2.53	2.33	1.93	
135	2.25	1.19	0.42	0.64	0.73	0.66	0.49	1.31	1.87	1.94	2.08	2.52	2.23	2.44	2.06	1.89	
140	2.15	1.21	0.54	0.64	0.65	0.66	0.58	1.34	1.79	2.05	1.68	2.40	2.08	2.36	1.64	2.06	
145	2.14	1.22	0.75	0.72	0.64	0.73	0.68	1.35	1.75	1.89	1.79	2.22	2.07	1.99	1.80	1.94	
150	2.01	1.22	1.08	0.86	0.89	0.93	1.02	1.47	1.74	1.77	1.97	2.09	2.07	1.96	2.14	1.94	
155	1.76	1.28	1.43	1.14	1.10	1.12	1.38	1.54	1.47	1.66	1.82	1.85	1.54	1.59	1.82	1.75	
160	1.67	1.37	1.61	1.34	1.32	1.33	1.63	1.65	1.50	1.47	1.77	1.85	1.62	1.37	1.62	1.69	
165	1.75	1.48	1.75	1.55	1.48	1.50	1.74	1.58	1.51	1.51	1.70	1.66	1.40	1.26	1.40	1.74	
170	1.90	1.72	2.04	1.78	1.63	1.87	2.06	1.60	1.91	2.03	2.18	2.51	2.62	2.55	2.27	2.53	
175	2.11	1.91	2.20	2.07	2.21	2.08	2.24	1.69	2.20	2.21	2.17	2.42	2.38	2.59	2.18	2.44	
180	2.17	2.14	2.28	2.08	2.33	2.11	2.26	1.83	2.10	2.15	2.17	2.27	2.08	2.34	2.10	2.25	

## BUG



### Laboratory: STANDARD-TECH TESTING SERVICES

Report Format Number STD-QP019-409-B/0

Address: Standard-Tech Building, No.6 Guanhong Road,Guangzhou Science City, Guangzhou 510663, China

Tel: 8620-3229 0320

Fax: 8620-32290422

<http://www.standard-tech.com>



## 2.2 Electrical, Photometric and Chromaticity Measurements

Test date	2023-02-16	Test Ambient:	25±1 °C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	AOK-150WPLA-HVS-L2-00-5 070-T3-E	Total Operating Time (min)	61

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE230102-	277.0	60	0.5414	148.9	0.9929	3.64
A1	480.0	60	0.3174	146.7	0.9628	4.67
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

### Chromaticity Measurement - Sphere-Spectroradiometer

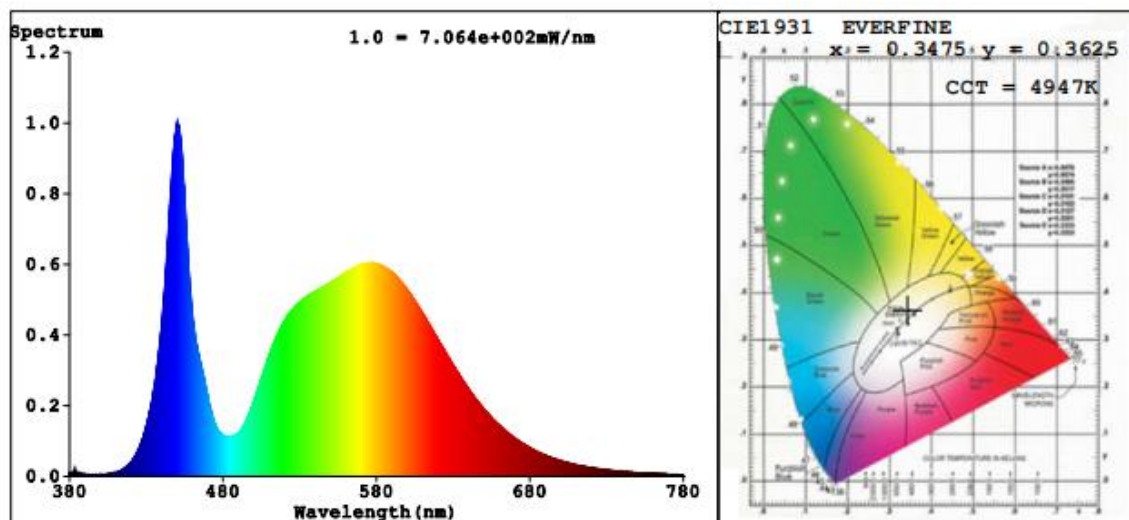
#### Method(Self-absorption:1.1655)(4 $\pi$ geometry):

Parameter	Result	Parameter	Result
Test Voltage (V)	277	Color Rendering Index (CRI)	71.5
Frequency (Hz)	60	R9	-42
CCT (K)	4947	Rg	92
Duv	0.0044	Rf	74
Chromaticity (x, y)	x=0.3475 y=0.3625	Rcs,h1(%)	-19
Chromaticity (u', v')	u'=0.2089 v'=0.4902		

### Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria	
Test Voltage (V)	277	480	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	23256	22691	>=1000(-10%)	
Luminous Efficacy (lm/W)	156.19	154.68	Standard: >= 105(-3%)	Premium: >= 120(-3%)

## Spectral Power Distribution & Chromaticity Diagram



## Special Color Rendering Indices

R1 =67	R2 =78	R3 =85	R4 =70	R5 =68	R6 =69	R7 =82
R8 =52	R9 =-42	R10=47	R11=66	R12=37	R13=69	R14=92
						R15=61

## TM30

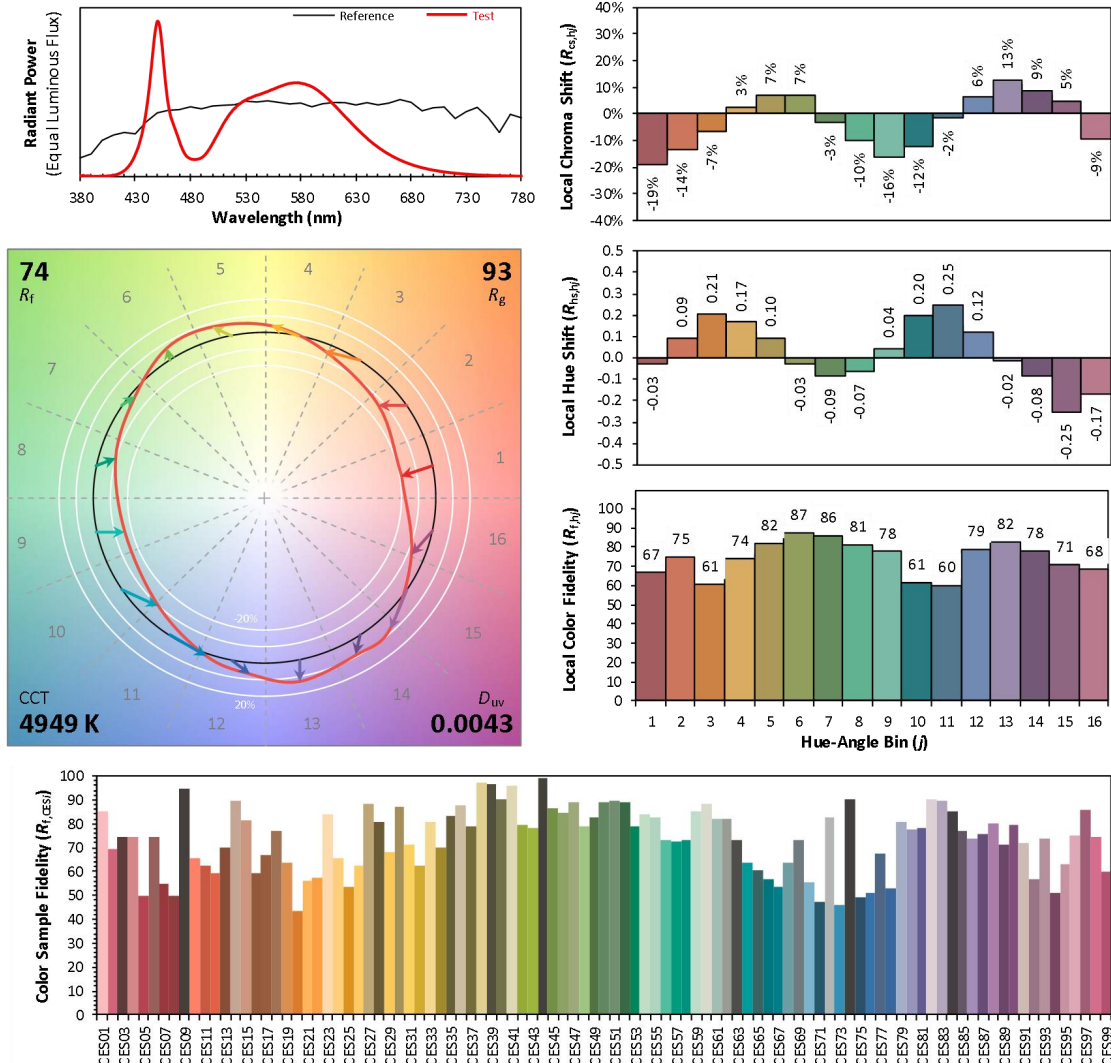
## ANSI/IES TM-30-18 Color Rendition Report

Source: L128-5070RB35000G1

Manufacturer: AOK LED Light Company Limited

Date: 2023-02-16

Model: AOK-150WPLA-HVS-L2-00-5070-T3-E



Notes: This is a recommended method for displaying ANSI/IES TM-30-18 information.

$x$  0.3475  
 $y$  0.3623  
 $u'$  0.2089  
 $v'$  0.4901

CIE 13.3-1995  
(CRI)

$R_a$  71  
 $R_g$  -42

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.0

**Laboratory: STANDARD-TECH TESTING SERVICES**

Report Format Number STD-QP019-409-B/0

Address: Standard-Tech Building, No.6 Guanhong Road, Guangzhou Science City, Guangzhou 510663, China

Tel: 8620-3229 0320

Fax: 8620-32290422

<http://www.standard-tech.com>

**3. Test Equipment**

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-423	2 meter Integrating Sphere	Verified by D204 standard lamp	
ST-R-327	Spectral analysis system HAAS-2000	Verified by D204 standard lamp	
ST-R-332	Standard Lamp	2022-07-06	2023-07-05
ST-R-333	Power Meter for Integrating Sphere	2022-07-11	2023-07-10
ST-R-405	Temperature Probe for Integrating Sphere	2023-01-18	2024-01-17
ST-R-355	Goniophotometer system	Verified by D908S standard lamp	
ST-R-359	Standard Lamp	2022-07-06	2023-07-05
ST-R-358	Power Meter for Goniophotometer	2022-07-11	2023-07-10
ST-R-354	hygrothermograph for Goniophotometer	2022-07-11	2023-07-10
Expand Uncertainty: Photometric Measurement (Sphere):3.06%, k=2 Chromaticity Measurement(Sphere):43.20K, k=2 Photometric Measurement(Goniophotometer):3.36%, k=2			

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