

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-NVS-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-NVS-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

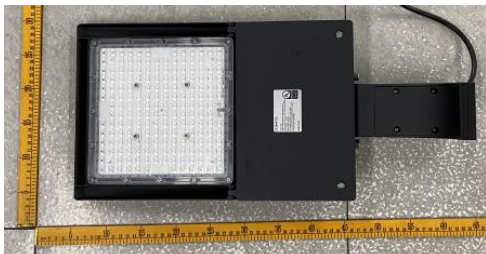

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<http://www.standard-tech.com>

1.1 Product Information:

Organization Name	AOK LED Light Company Limited		
Brand Name	AOK		
Model Number	AOK-150WPLA-NVS-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	100-277Vac, 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-B1		
Luminaire Aperture (for downlights)	--	in. mm mm s	
Luminaire Length	--		
Luminaires Width	--		
Number of Units (modular products)	N/A		
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"> 1. Total Luminous Flux 2. Luminous Distribution Intensity 3. Luminous Efficacy 4. Correlated Color Temperature 5. Color Rendering Index 6. Chromaticity Coordinate 7. Electrical Parameters
Reference Standard	<ol style="list-style-type: none"> 1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2017 Specifications for the Chromaticity of Solid State Lighting Products 3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources 4. CIE 15-2004 Technical Report Colorimetry 5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source 6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems

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° vertical intervals and 22.5° 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

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

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE230102-B1	120.0	60	1.253	149.5	0.9947	6.61
	277.0	60	0.5681	143.7	0.9131	10.22
DLC Pass Criteria					≥ 0.9(-3%)	≤ 20(+5)

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

Parameter	Result		DLC V5.1 Pass Criteria	
Test Voltage (V)	120	277	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	22894	22405	≥1000(-10%)	
Luminous Efficacy (lm/W)	153.17	155.95	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 (°)	112.9	--	--	
Center Beam Candle Power (cd)	6041	--	--	

Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	4,593.2	20.1%
0-40	7,760.2	33.9%
0-60	16,213.6	70.8%
60-90	6,598.4	28.8%
70-100	2,236.3	9.8%
90-120	31.3	0.1%
0-90	22,812.0	99.6%
90-180	82.7	0.4%
0-180	22,894.7	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	567.8	2.5%	90-100	6.1	0%
10-20	1,602.3	7.0%	100-110	11.5	0.1%
20-30	2,423.2	10.6%	110-120	13.8	0.1%
30-40	3,167.0	13.8%	120-130	15.0	0.1%
40-50	3,905.5	17.1%	130-140	12.3	0.1%
50-60	4,547.9	19.9%	140-150	9.7	0%
60-70	4,368.2	19.1%	150-160	7.5	0%
70-80	2,016.2	8.8%	160-170	4.8	0%
80-90	214.0	0.9%	170-180	2.1	0%

Photometric Data

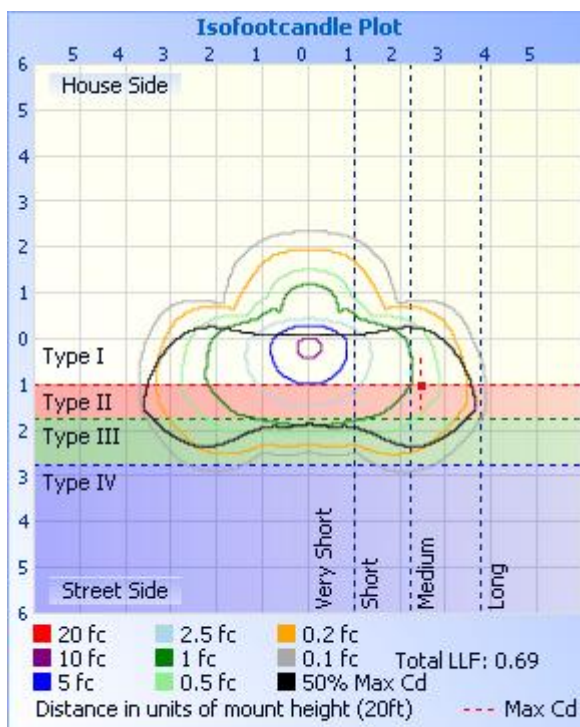
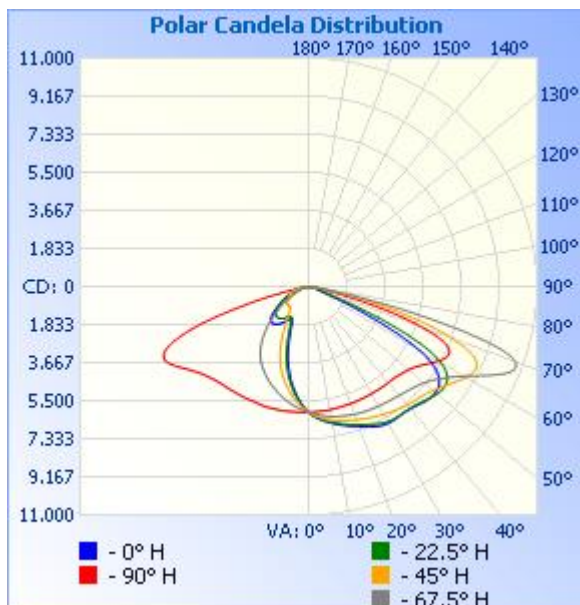
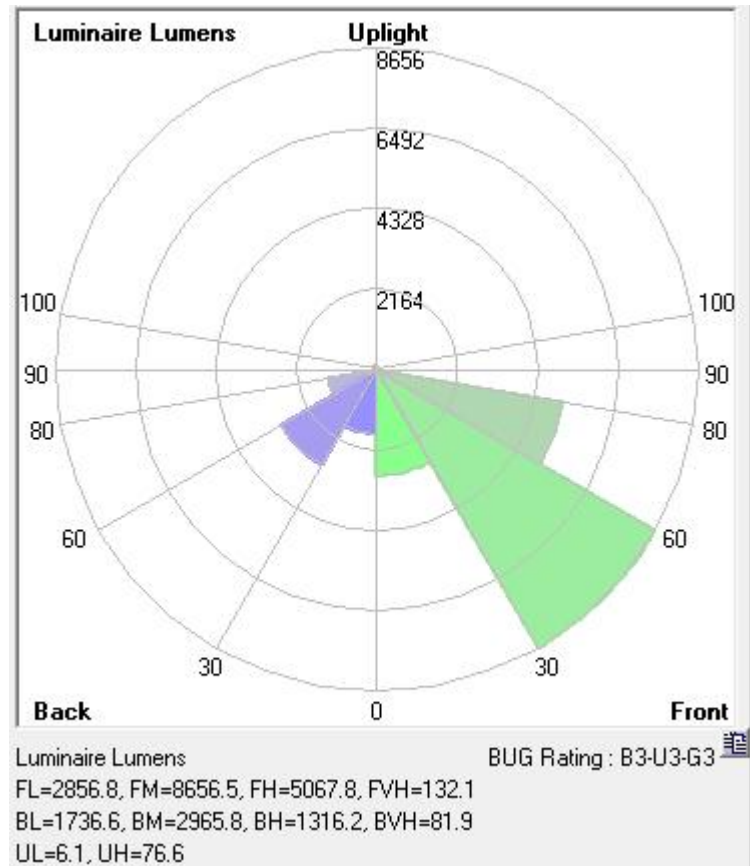


Table--1

UNIT: X10cd

C (DEG) Y (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	604	604	604	604	604	604	604	604	604	604	604	604	604	604	604	604	
5	606	623	634	640	642	640	632	621	603	584	565	550	545	551	566	586	
10	609	639	656	667	668	663	652	635	601	562	514	481	469	483	516	563	
15	611	652	676	692	692	686	667	644	599	533	457	401	381	402	460	537	
20	613	663	695	715	716	708	682	653	598	503	394	307	276	307	397	509	
25	614	672	712	739	743	731	696	660	598	473	317	213	190	212	321	479	
30	617	681	727	760	761	753	712	666	598	437	234	170	177	168	237	446	
35	620	691	743	768	761	760	727	673	599	399	172	182	210	179	172	406	
40	626	705	758	770	766	764	742	682	601	349	140	205	236	200	138	353	
45	637	724	772	788	785	781	756	697	607	286	137	216	248	211	134	291	
50	659	757	796	810	797	805	779	722	624	219	136	211	237	207	133	224	
55	699	814	838	813	767	810	821	772	661	158	127	186	199	184	125	162	
60	755	914	890	737	622	739	874	863	718	104	114	153	155	152	112	105	
65	770	1041	904	443	264	454	893	1003	749	65.8	96.7	122	112	121	96.0	62.1	
70	603	1018	740	111	56.7	113	745	1061	598	45.1	98.9	91.0	79.8	90.1	97.3	42.3	
75	255	506	393	42.9	42.4	43.3	401	634	250	33.4	70.4	64.0	55.2	63.9	66.7	31.1	
80	47.3	102	108	38.2	44.7	38.2	108	134	46.5	22.9	36.5	35.1	31.8	35.5	36.0	20.9	
85	9.68	19.6	21.4	13.9	11.9	14.7	21.2	26.9	9.36	23.0	14.6	12.9	7.06	12.6	14.4	34.2	
90	0.47	0.44	0.47	0.20	0.11	0.17	0.41	0.72	0.42	0.56	0.45	0.08	0.06	0.08	0.48	0.77	
95	1.11	0.20	0.32	0.18	0.11	0.15	0.28	0.25	0.72	1.35	1.01	0.13	0.08	0.14	1.06	1.54	
100	1.93	0.17	0.30	0.18	0.14	0.18	0.27	0.18	1.26	2.13	1.64	0.46	0.23	0.49	1.68	2.26	
105	2.40	0.26	0.30	0.28	0.26	0.28	0.27	0.28	1.73	2.48	1.94	0.98	0.67	1.03	2.03	2.47	
110	2.62	0.45	0.30	0.35	0.43	0.36	0.29	0.50	2.04	2.59	1.93	1.24	1.10	1.29	2.02	2.66	
115	2.64	0.70	0.33	0.42	0.50	0.42	0.34	0.73	2.06	2.82	2.32	1.27	1.22	1.41	2.30	2.61	
120	2.66	0.87	0.43	0.58	0.60	0.52	0.42	0.90	2.06	2.98	2.80	1.85	1.52	1.89	2.51	2.59	
125	2.63	1.07	0.42	0.73	0.86	0.72	0.42	1.11	2.04	2.93	2.35	2.32	2.24	2.31	2.26	2.61	
130	2.65	1.18	0.42	0.73	0.87	0.71	0.43	1.31	2.09	2.25	2.18	2.55	2.50	2.52	2.37	1.94	
135	2.32	1.19	0.46	0.70	0.74	0.70	0.58	1.31	1.83	1.92	2.13	2.48	2.25	2.45	2.17	1.94	
140	2.22	1.32	0.58	0.70	0.67	0.70	0.62	1.32	1.80	2.02	1.70	2.45	2.13	2.40	1.67	2.08	
145	2.21	1.29	0.86	0.78	0.72	0.82	0.77	1.35	1.76	1.92	1.75	2.20	2.07	2.10	1.78	2.01	
150	2.07	1.32	1.22	0.93	0.96	1.01	1.13	1.51	1.76	1.82	2.01	2.11	2.11	2.08	2.21	1.99	
155	1.82	1.35	1.52	1.21	1.19	1.20	1.49	1.64	1.49	1.74	1.91	1.90	1.68	1.74	2.00	1.81	
160	1.74	1.47	1.69	1.50	1.35	1.41	1.72	1.65	1.53	1.52	1.79	1.90	1.58	1.46	1.66	1.75	
165	1.81	1.54	1.81	1.61	1.50	1.56	1.78	1.63	1.56	1.54	1.73	1.69	1.45	1.35	1.45	1.80	
170	2.02	1.84	2.14	1.97	1.84	1.98	2.15	1.64	1.96	1.94	2.15	2.46	2.48	2.34	2.21	2.59	
175	2.19	2.09	2.29	2.09	2.29	2.14	2.29	1.78	2.26	2.27	2.22	2.50	2.51	2.66	2.24	2.52	
180	2.16	2.21	2.29	2.10	2.36	2.16	2.32	1.94	2.17	2.19	2.21	2.27	2.11	2.38	2.15	2.34	

BUG



Laboratory: STANDARD-TECH TESTING SERVICES

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

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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-NVS-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-B1	120.0	60	1.257	150.1	0.9949	6.54
	277.0	60	0.5704	144.3	0.9133	10.17
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer

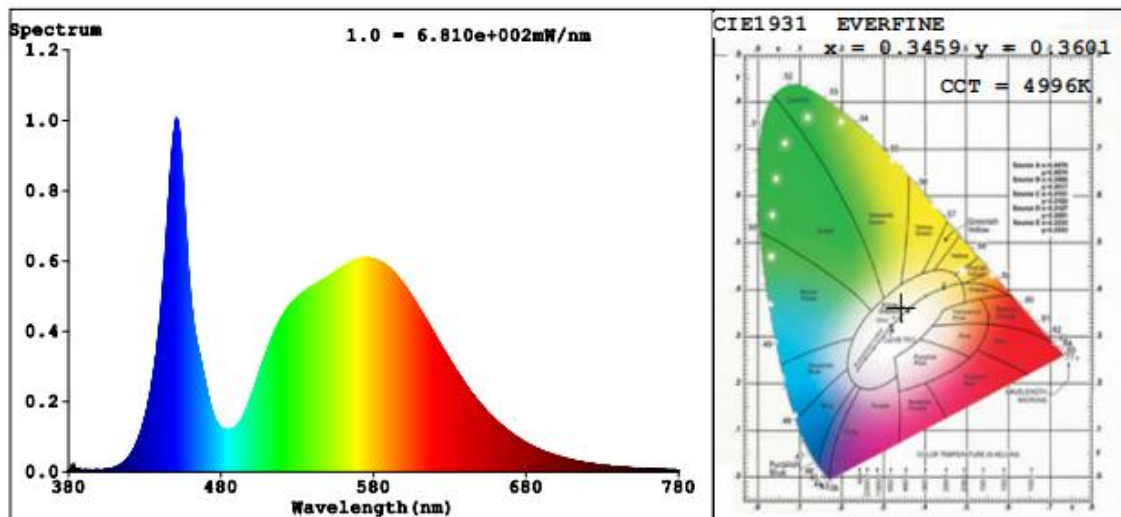
Method(Self-absorption:1.1651)(4 π geometry):

Parameter	Result	Parameter	Result
Test Voltage (V)	120	Color Rendering Index (CRI)	71.8
Frequency (Hz)	60	R9	-40
CCT (K)	4996	Rg	92
Duv	0.0039	Rf	74
Chromaticity (x, y)	x=0.3459 y=0.3601	Rcs,h1(%)	-19
Chromaticity (u', v')	u'=0.2088 v'=0.4889		

Photometric Measurement –Sphere-Spectroradiometer Method:

Parameter	Result		DLC V5.1 Pass Criteria	
Test Voltage (V)	120	277	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	23038	22546	>=1000(-10%)	
Luminous Efficacy (lm/W)	153.48	156.24	Standard: >= 105(-3%)	Premium: >= 120(-3%)

Spectral Power Distribution & Chromaticity Diagram



Special Color Rendering Indices

R1 =68	R2 =78	R3 =86	R4 =70	R5 =68	R6 =69	R7 =82
R8 =53	R9 =-40	R10=48	R11=66	R12=38	R13=70	R14=92
						R15=61

TM30

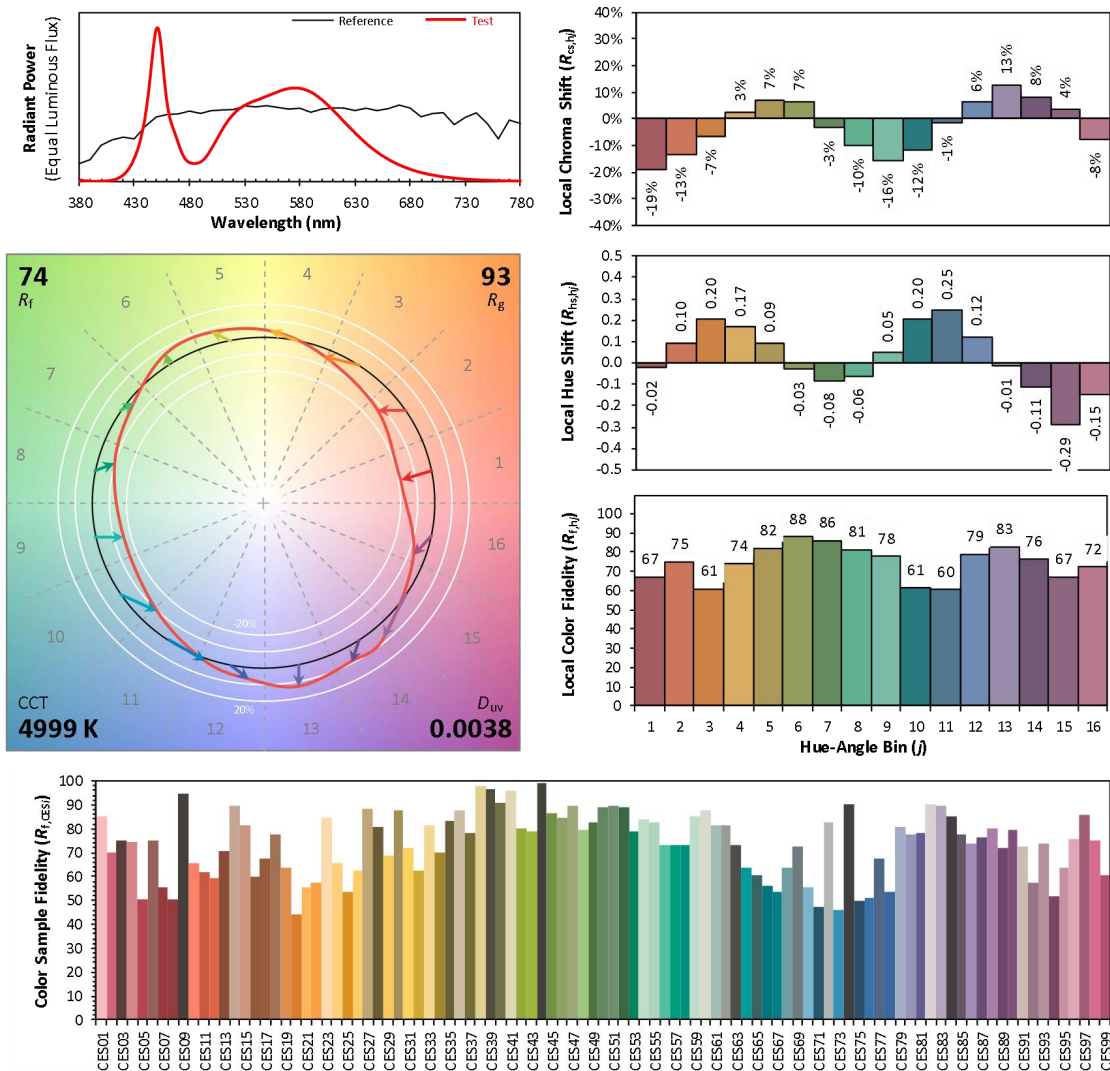
ANSI/IES TM-30-18 Color Rendition Report

Source: L128-5070RB35000G1

Manufacturer: AOK LED Light Company Limited

Date: 2023-02-16

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



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

x 0.3459
 y 0.3599
 u' 0.2088
 v' 0.4888

CIE 13.3-1995
(CRI)

R_a 72
 R_g -40

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

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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 *******