

## LM-79-08 Test Report

For

### Antec Lighting Inc

(Brand Name: **AOK**)  
Quality. Honesty. Service and Innovation.

Uniy C, 3979 E Guasti Road, Ontario, CA 91761

## Architectural Flood and Spot Luminaires

Model name(s): AOK-460WoF-NV-X5-XX-XX70-30-P

Remark: The first "XX" can be "00" for without sensor or "SN" for with Photocontrol function. The second "XX" represents different CCT as below: 30=3000K, 40=4000K, 50=5000K, 57=5700K; "P" can be blank, "A" or "B", blank is ceiling and wall mounted, "A" stands for Ceiling mounted only, "B" stands for Wall mounted only.

Representative (Tested) Model:  
AOK-460WoF-NV-X5-00-3070-30-A  
AOK-460WoF-NV-X5-00-5770-30-A

Model Difference: All construction and rating are the same, except CCT.

Test & Report By:

*Clint Chen*

Engineer: Clint Chen

Date: Jul.29,2018

Review By:

*John Li*

Manager: John Li

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 NVLAP, NIST, or any agency of the Federal Government.

**Laboratory: Standard-Tech Co., Ltd Testing Center**  
**NVLAP CODE: 201011-0**

Report Format Number STD/QR4909-A/2


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	Antec Lighting Inc	
Brand Name	 Quality, Honesty, Service and Innovation	
Model Number	AOK-460WoF-NV-X5-00-XX70-30-P	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Architectural Flood and Spot Luminaires	
Rated Voltage / Frequency	100-277V ac, 50/60 Hz	
Nominal Power	460W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K, 4000K, 5000K, 5700K.	
LED Manufacturer	Lumileds	
LED Model	L150-3070500600000 L150-5770500600000	
Sample Number	JAE180410-H1(3000K), H2(5700K)	
Lamp Length	--	mm
Lamp Width	--	mm
Number of Units (modular products)	N/A	s

**Photo**

**Laboratory: Standard-Tech Co., Ltd Testing Center**
**NVLAP CODE: 201011-0**

Report Format Number STD/QR4909-A/2

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>

## 1.2 Test Specifications:

Date of Receipt	Jul.23,2018
Date of Test	Jul.25,2018
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 C78.377-2008 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>
Reference Work Instruction	QD25

## 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***(Refer to Work Instruction QD25)*

<b>Test date</b>	2018-07-25	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	Horizontal	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	AOK-460WoF-NV-X5-00-3070-30-A		

**Electrical Measurement :**

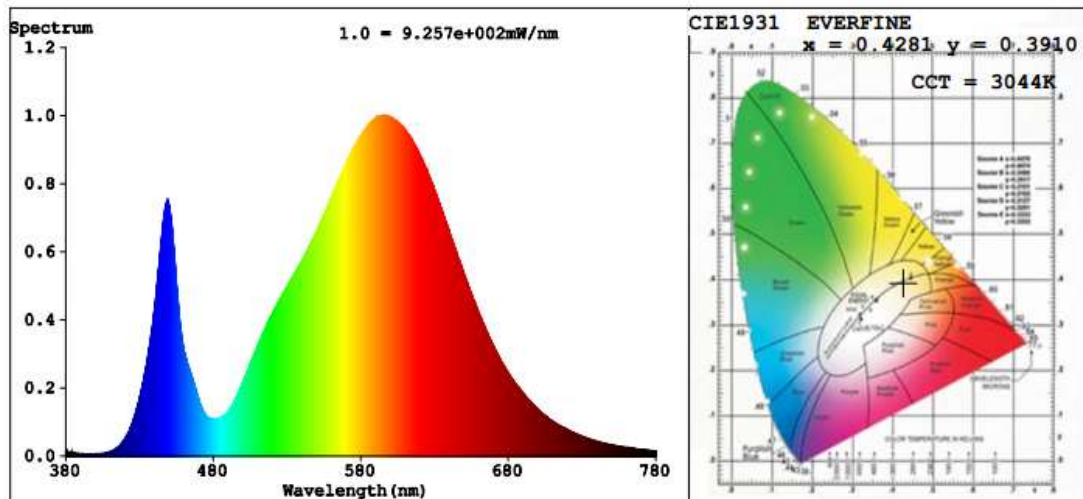
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE180410	120.0	60	3.8648	461.6	0.9953	4.86
-H1	277.0	60	1.6717	441.9	0.9543	9.66
<b>DLC Pass Criteria</b>					$\geq 0.9(-3\%)$	$\leq 20(+5)$

**Chromaticity Measurement -Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	72	R9	0
Frequency (Hz)	60	R2	84	R10	62
CCT (K)	3044	R3	93	R11	66
Duv	-0.0041	R4	71	R12	55
Chromaticity (x, y)	x=0.4281 y=0.3910	R5	71	R13	74
Chromaticity (u', v')	u'=0.2505 v'=0.5148	R6	77	R14	96
Color Rendering Index (CRI)	74.8	R7	79	R15	67
R9	0	R8	51	--	--

**Photometric Measurement –Goniophotometer Method:**

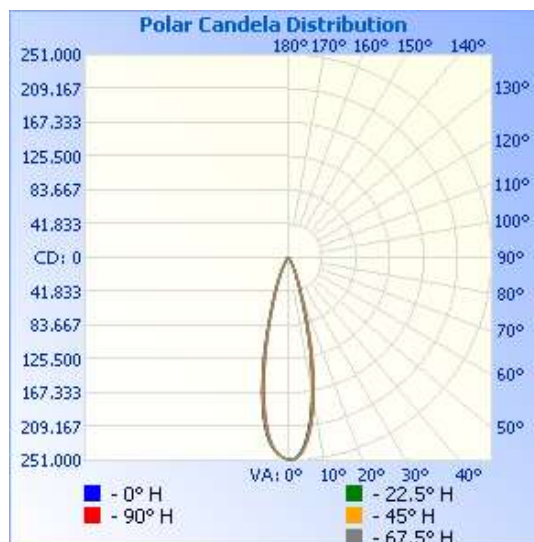
Parameter	Result		DLC V4.3 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	67611	67515	>=30000(-10%)	
Luminous Efficacy (lm/W)	146.47	152.78	Standard: >= 100(-3%)	Premium: >= 120(-3%)
Most Worst Luminous/Highest Watts	146.26			
Zonal lumens in the 0-90 °zone (%)	99.7	--	>=85(-3)	
Beam Angle ( °)	26.7	--	--	
Center Beam Candle Power (cd)	249561	--	--	

**Spectral Power Distribution & Chromaticity Diagram**

**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	58,559.9	86.7%
0-40	62,218.3	92.1%
0-60	65,609.4	97.1%
60-90	1,718.9	2.5%
70-100	649.4	1%
90-120	13.6	0%
0-90	67,328.3	99.7%
90-180	226.3	0.3%
0-180	67,554.6	100%

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-10	20,410.5	30.2%	90-100	6.2	0%
10-20	27,182.2	40.2%	100-110	3.5	0%
20-30	10,967.2	16.2%	110-120	4.0	0%
30-40	3,658.3	5.4%	120-130	5.8	0%
40-50	1,871.6	2.8%	130-140	15.8	0%
50-60	1,519.6	2.2%	140-150	45.2	0.1%
60-70	1,075.6	1.6%	150-160	72.6	0.1%
70-80	531.4	0.8%	160-170	54.3	0.1%
80-90	111.8	0.2%	170-180	19.0	0%

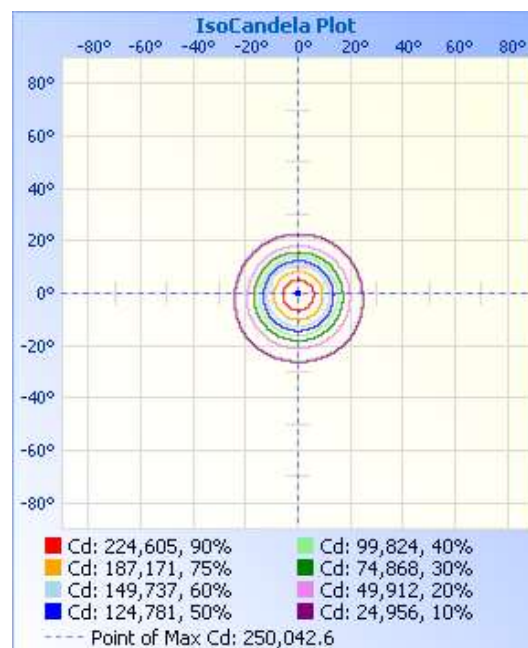
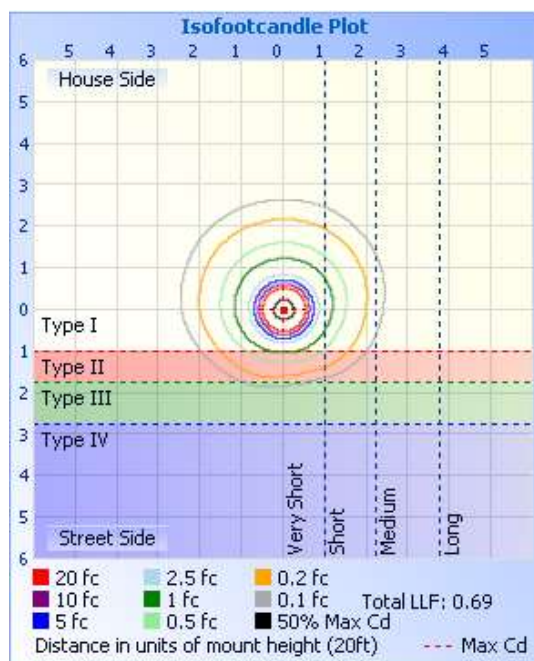
## Photometric Data



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
17.0ft	863.5 fc	8.1 ft	8.1 ft
34.0ft	215.9 fc	16.1 ft	16.2 ft
51.0ft	95.9 fc	24.2 ft	24.3 ft
68.0ft	54.0 fc	32.3 ft	32.4 ft
85.0ft	34.5 fc	40.3 ft	40.5 ft
102.0ft	24.0 fc	48.4 ft	48.6 ft

■ Vert. Spread: 26.7°  
■ Horiz. Spread: 26.8°



Laboratory: Standard-Tech Co., Ltd Testing Center  
 NVLAP CODE: 201011-0

Report Format Number STD/QR4909-A/2

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: \*100cd

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	2496	2496	2496	2496	2496	2496	2496	2496	2496	2496	2496	2496	2496	2496	2496	2496	
5	2317	2314	2307	2310	2310	2325	2343	2350	2355	2351	2344	2347	2343	2338	2328	2318	
10	1731	1694	1676	1678	1682	1694	1728	1764	1801	1830	1843	1850	1845	1827	1806	1772	
15	976	931	897	887	883	901	930	971	1031	1069	1078	1094	1089	1061	1028	999	
20	458	420	394	380	372	386	409	431	470	514	522	538	535	525	503	484	
25	224	201	190	185	177	181	193	207	229	256	270	277	277	273	264	250	
30	109	98.6	93.6	91.5	85.2	85.6	90.0	98.4	109	123	134	131	132	130	129	123	
35	56.0	50.4	47.3	44.8	42.4	43.2	45.9	50.2	55.0	60.6	65.3	64.0	63.5	62.9	63.5	61.5	
40	31.7	28.6	26.3	24.1	23.2	23.9	25.5	28.2	32.1	34.8	36.4	36.2	35.9	35.8	36.0	35.6	
45	24.8	22.5	20.1	17.7	17.1	18.0	19.0	21.3	24.3	26.7	28.4	28.6	28.4	28.2	28.5	27.3	
50	21.2	18.7	15.9	13.6	12.8	13.9	15.5	17.1	20.3	23.2	25.0	25.2	24.9	24.9	24.8	23.6	
55	18.3	15.4	12.5	10.7	9.14	9.84	12.8	13.9	17.1	20.2	22.0	22.4	22.2	22.2	22.1	20.6	
60	15.7	12.2	9.73	8.45	5.77	5.83	9.66	11.8	14.1	17.3	19.2	19.8	19.4	19.6	19.5	17.7	
65	12.7	9.23	6.36	3.68	2.20	2.44	6.06	9.14	11.2	14.2	16.1	16.8	16.4	16.7	16.5	14.7	
70	9.34	6.63	2.23	0.11	0.07	0.12	2.88	5.89	8.28	10.8	12.4	13.2	12.8	13.2	13.0	11.4	
75	5.88	3.72	0.92	0.03	0.01	0.04	1.33	3.47	5.39	7.12	8.41	8.95	8.79	9.10	8.87	7.69	
80	3.06	1.67	0.38	0.03	0.03	0.05	0.57	1.73	2.77	3.81	4.61	4.94	4.91	5.01	4.93	4.24	
85	0.97	0.47	0.10	0.03	0.05	0.07	0.15	0.45	0.79	1.18	1.50	1.67	1.65	1.63	1.63	1.41	
90	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.10	0.17	0.22	0.23	0.21	0.19	0.12	
95	0.02	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.05	0.09	0.12	0.12	0.11	0.10	0.05	
100	0.03	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.04	0.06	0.06	0.06	0.04	0.02	
105	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.02	0.02	0.02	0.03	0.02	0.02	0.02	
110	0.04	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.03	0.03	0.02	0.01	0.02	0.02	0.02	
115	0.05	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.02	0.02	0.02	0.02	0.03	
120	0.07	0.05	0.07	0.06	0.06	0.05	0.05	0.04	0.05	0.04	0.03	0.02	0.03	0.03	0.03	0.03	
125	0.09	0.10	0.08	0.08	0.08	0.07	0.07	0.07	0.06	0.06	0.04	0.03	0.03	0.03	0.04	0.04	
130	0.16	0.15	0.11	0.11	0.11	0.12	0.12	0.14	0.12	0.09	0.06	0.05	0.06	0.06	0.06	0.10	
135	0.28	0.26	0.18	0.19	0.18	0.19	0.18	0.25	0.24	0.19	0.12	0.12	0.16	0.15	0.13	0.24	
140	0.50	0.48	0.28	0.34	0.31	0.32	0.27	0.45	0.48	0.44	0.23	0.33	0.45	0.36	0.32	0.58	
145	0.69	0.81	0.43	0.61	0.52	0.55	0.38	0.80	0.72	0.91	0.39	0.86	1.04	0.78	0.67	1.15	
150	1.42	1.39	0.81	0.97	0.90	0.93	0.38	1.28	1.41	1.45	1.05	1.46	1.69	1.37	0.68	1.82	
155	1.97	1.89	0.80	1.35	1.48	1.29	0.68	1.53	1.91	1.81	1.65	1.67	2.09	1.95	1.30	2.36	
160	2.32	2.09	1.28	1.76	2.05	1.60	1.39	1.70	2.12	2.18	1.91	1.68	2.44	2.25	1.83	2.34	
165	1.97	1.57	1.54	1.60	2.30	1.57	1.55	1.66	2.15	2.19	1.89	2.06	2.40	2.26	2.04	1.99	
170	1.70	1.89	1.61	1.70	2.06	1.71	1.65	1.80	1.61	1.63	1.99	2.28	2.08	2.13	2.11	2.16	
175	2.09	1.98	2.04	1.89	1.77	1.88	2.22	1.93	2.04	2.05	2.09	2.27	2.00	1.91	2.07	2.27	
180	2.00	1.98	2.20	2.00	1.77	2.02	2.28	1.95	1.97	1.98	1.94	2.18	1.99	1.76	2.01	2.28	

## 2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2018-07-25	Test Ambient:	25.2 °C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	AOK-460WoF-NV-X5-00-5770-30-A		

### Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE180410	120.0	60	3.8840	463.8	0.9951	4.83
-H2	277.0	60	1.6755	442.8	0.9541	9.72
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

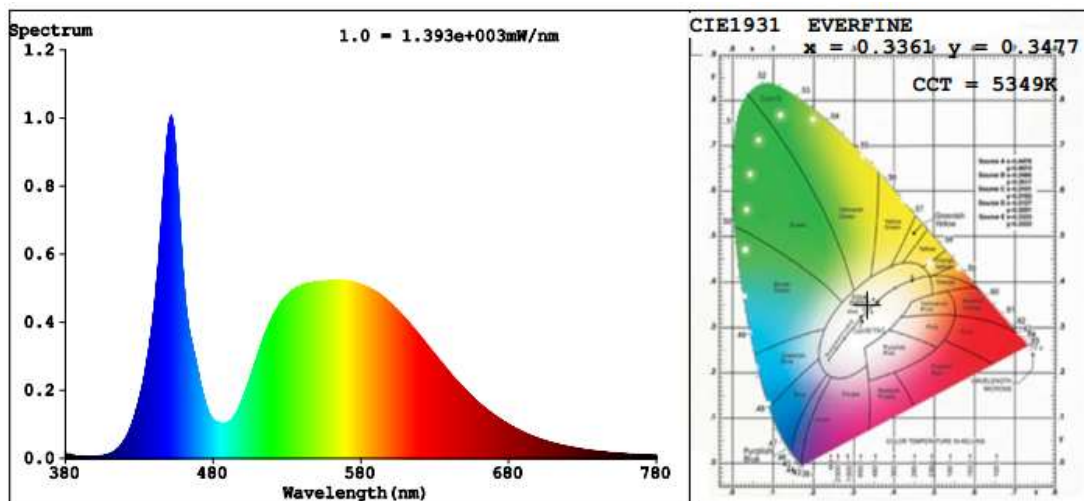
### Chromaticity Measurement -Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	73	R9	0
Frequency (Hz)	60	R2	79	R10	47
CCT (K)	5349	R3	81	R11	71
Duv	0.0018	R4	75	R12	42
Chromaticity (x, y)	x=0.3361 y=0.3477	R5	73	R13	73
Chromaticity (u', v')	u'=0.2068 v'=0.4814	R6	70	R14	89
Color Rendering Index (CRI)	74.4	R7	83	R15	69
R9	0	R8	62	--	--

### Photometric Measurement –Spectroradiometer Method:

Parameter	Result		DLC V4.3 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	72450	72150	>=30000(-10%)	
Luminous Efficacy (lm/W)	156.21	162.94	Standard: >= 100(-3%)	Premium: >= 120(-3%)
Most Worst Luminous/Highest Watts	155.56			



**Spectral Power Distribution & Chromaticity Diagram**

Laboratory: Standard-Tech Co., Ltd Testing Center  
NVLAP CODE: 201011-0

Report Format Number STD/QR4909-A/2

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>

### 2.3 Performance Assessment:

Model name	CCT(K)	Total Luminous (lm)	Power (W)	Luminous Efficacy (lm/W)
AOK-460WoF-NV-X5-00-3070-30-A	3000	67611	461.6	146.47
AOK-460WoF-NV-X5-00-4070-30-A	4000	69547 <sup>*1</sup>	462.7 <sup>*2</sup>	150.31 <sup>*3</sup>
AOK-460WoF-NV-X5-00-5070-30-A	5000	71482 <sup>*1</sup>	462.7 <sup>*2</sup>	154.49 <sup>*3</sup>
AOK-460WoF-NV-X5-00-5770-30-A	5700	72450	463.8	156.21

\*1: This value is calculated and the calculation formula is as below:

$$69547 = (72450 - 67611) / 5 * 2 + 67611$$

$$71482 = (72450 - 67611) / 5 * 4 + 67611$$

\*2: This value is calculated and the calculation formula is as below:

$$462.7 = (461.6 + 463.8) / 2$$

\*3: This value is calculated and the calculation formula is as below:

$$150.31 = 69547 / 462.7$$

$$154.49 = 71482 / 462.7$$

Laboratory: Standard-Tech Co., Ltd Testing Center

NVLAP CODE: 201011-0

Report Format Number STD/QR4909-A/2

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-331	2 meter Integrating Sphere	2018-07-01	2019-06-30
ST-R-327	Spectral analysis system HAAS-2000	2018-07-01	2019-06-30
D204	Standard Lamp	2017-07-12	2018-07-11
PF2010	Power Meter for Integrating Sphere	2018-07-01	2019-06-30
GO-R5000	Goniophotometer system	2018-07-01	2019-06-30
D908S	Standard Lamp	2017-07-12	2018-07-11
PF210	Power Meter for Goniophotometer	2018-07-07	2019-07-06
Expand Uncertainty: Photometric Measurement (Sphere):2.04%, k=2 Chromaticity Measurement(Sphere):28.8K, k=2 Photometric Measurement(Goniophotometer):2.36%, k=2			

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