

## **LM-79-08 Test Report**

For

**Antec Lighting Inc**

(Brand Name: )  
Quality, Honesty, Service and Innovation

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

**Model name(s):**

**AOK-120WiP-NV-L3-XX-XX80-T5-A**

**Report Type:** Testing and Report According to IES LM-79-2008  
**Type of Luminaire:** Outdoor Pole/Arm-Mounted Area and Roadway Luminaires  
**Report Date:** 2019-03-25  
Ningbo TengLi Testing Co., Ltd  
**Prepared By:** 2nd floor, Block B, Ningbo Testing and Certification Base,  
No. 66 Qingyi Road, Ningbo National Hi-Tech Zone,  
Ningbo, Zhejiang

Test & Report By:

*Xeon Ren*

Engineer: Xeon Ren

Review By:

*Johnson Sun*

Manager: Johnson Sun

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.

1.1 Product Information:		
Model Number	AOK-120WiP-NV-L3-XX-XX80-T5-A	
Remark	The first “XX” can be “00” for without sensor or “SN” for with sensor function or “PH” for Plug-In photocontrol The second “XX” represents different CCT as below: 30=3000K, 35=3500K, 40=4000K, 50=5000K, 57=5700K;	
Representative (Tested) Model	AOK-120WiP-NV-L3-00-3080-T5-A AOK-120WiP-NV-L3-00-5780-T5-A	
Model Difference	All construction and rating are the same, except CCT	
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	
LED Manufacturer	LUMILEDS	
LED Model	3000K: L130-3080003000X21 5000K: L130-5780003000X21	
Dimming	Dimmable	
Sample Number	JAE180920-OTD1(3000K) JAE180920-OTD2(5700K)	
Date of Receipt	2019-03-08	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

1.2 Rated Values:	
Rated Voltage / Frequency	100-277Vac, 50/60Hz
Nominal Power	120W
Rated Initial Lamp Lumen	--
Declared CCT	3000K, 3500K, 4000K, 5000K, 5700K;

1.3 Test Specifications:	
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 C78.377-2015 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

## 1.4 Test Methods

<p><b>1) Photometric and Light Distribution Measurement – Goniophotometer Method:</b></p> <p>Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at <math>25^{\circ}\text{C} \pm 1^{\circ}\text{C}</math>, 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 <math>1^{\circ}</math> vertical intervals and <math>22.5^{\circ}</math> horizontal intervals.</p>
<p><b>2) Chromaticity Measurement – Sphere-Spectroradiometer Method:</b></p> <p>Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at <math>25^{\circ}\text{C} \pm 1^{\circ}\text{C}</math>. 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.</p>
<p><b>3) Electrical Measurements:</b></p> <p>Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at <math>25^{\circ}\text{C} \pm 1^{\circ}\text{C}</math>. 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.</p>

## 2.1 Summary of Test Result

Criteria Item	Measured Value			Compliance	Requirement (DLC V4.4)	
Power (W)	3000K	120V	120.8	N/A	N/A	
		277V	118.9			
	5700K	120V	121.2			
		277V	119.1			
Power Factor	3000K	120V	0.9960	Pass	>= 0.9(-3%)	
		277V	0.9665			
	5700K	120V	0.9950			
		277V	0.9669			
THD %	3000K	120V	5.31	Pass	<= 20(+5)	
		277V	7.73			
	5700K	120V	5.26			
		277V	7.78			
CRI	3000K	3066		Pass	>= 65(-2)	
	5700K	5579				
CCT (K)	3000K	82.5		Pass	<=5700K	
	5700K	82.3				
Luminous Intensity Distribution	Zonal lumens in the 0-90 °		99.6%	Pass	>= 100(-1)	
	Zonal lumens in the 80-90 °		0.4%	Pass	<= 10(+3)	
Total Luminous	3000K	120V	13059	Pass	>=1000(-10%)	
		277V	12836			
	5700K	120V	13676			
		277V	13421.3			
Luminous Efficacy	3000K	120V	108.10	Pass	Standard: >= 100(-3%)	Premium: >= 120(-3%)
		277V	107.96			
	5700K	120V	112.84			
		277V	112.69			

## 2.2 Electrical, Photometric and Chromaticity Measurements

Test date	2019-03-19	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AOK-120WiP-NV-L3-00-3080-T5-A		

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE180920-OTD1	119.8	60	1.011	120.8	0.9960	5.31
	277.3	60	0.4441	118.9	0.9665	7.73

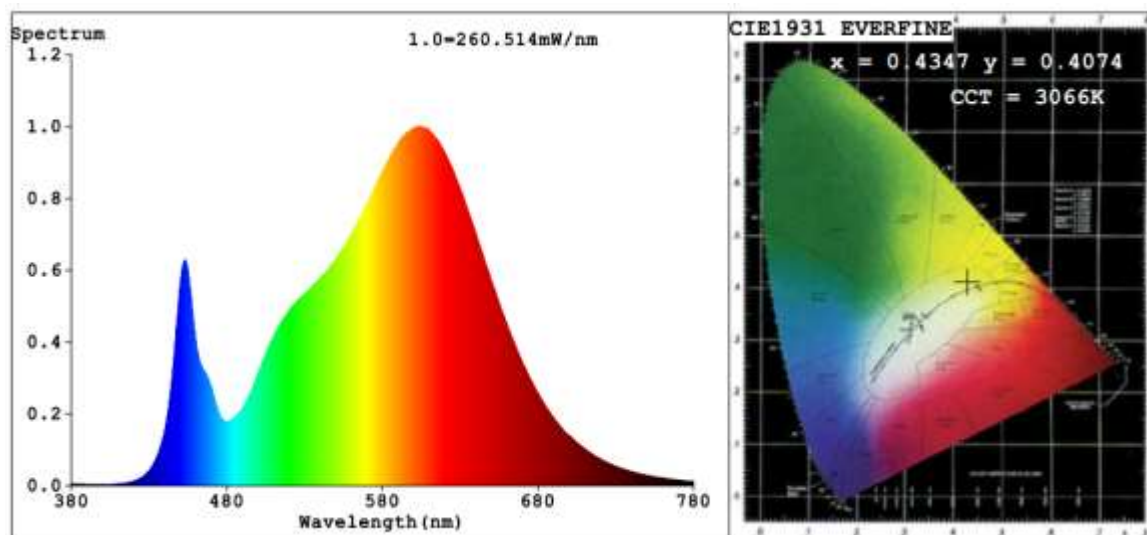
### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	119.8	R1	81	R9	6
Frequency (Hz)	60	R2	90	R10	77
CCT (K)	3066	R3	97	R11	80
Duv	0.0016	R4	81	R12	65
Chromaticity (x, y)	x=0.4347 y=0.4074	R5	81	R13	83
Chromaticity (u', v')	u'=0.2477 v'=0.5223	R6	88	R14	99
Color Rendering Index (CRI)	82.5	R7	84	R15	73
R9	6	R8	59	--	--

### Photometric Measurement – Goniophotometer Method:

Parameter	Result	
Test Voltage (V)	119.8	277.3
Frequency (Hz)	60	60
Total Luminous (lm)	13059	12836
Luminous Efficacy (lm/W)	108.10	107.96
Zonal lumens in the 0-90 °	99.6%	--
Zonal lumens in the 80-90 °	0.4%	--
Beam Angle (°)	141.8	--
Center Beam Candle Power (cd)	2110	--

## Spectral Power Distribution & Chromaticity Diagram



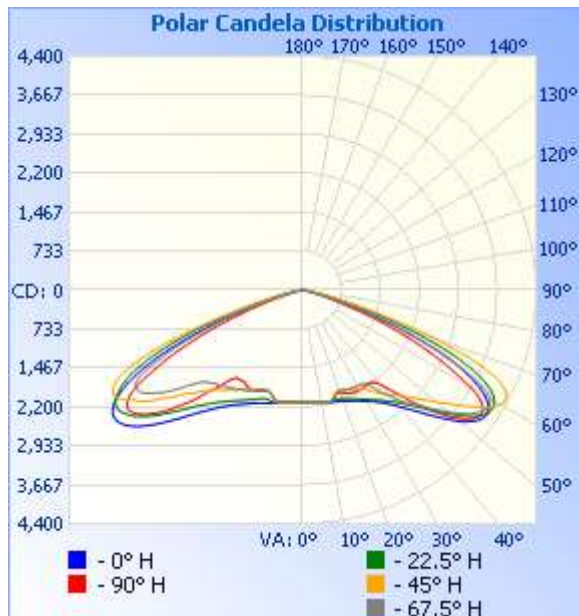
## Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,801.7	13.8%
0-40	3,300.8	25.3%
0-60	9,081.1	69.5%
60-90	3,923.2	30%
70-100	845.3	6.5%
90-120	37.1	0.3%
0-90	13,004.3	99.6%
90-180	54.0	0.4%
0-180	13,058.2	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	203.0	1.6%	90-100	15.1	0.1%
10-20	601.2	4.6%	100-110	12.0	0.1%
20-30	997.5	7.6%	110-120	9.9	0.1%
30-40	1,499.1	11.5%	120-130	7.3	0.1%
40-50	2,321.1	17.8%	130-140	4.4	0%
50-60	3,459.2	26.5%	140-150	2.6	0%
60-70	3,093.0	23.7%	150-160	1.4	0%
70-80	774.2	5.9%	160-170	0.9	0%
80-90	56.0	0.4%	170-180	0.4	0%



## Photometric Data



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
17.0ft	7.30 fc	74.1 ft	46.7 ft
34.0ft	1.83 fc	148.1 ft	93.4 ft
51.0ft	0.81 fc	222.2 ft	140.1 ft
68.0ft	0.46 fc	296.3 ft	186.9 ft
85.0ft	0.29 fc	370.4 ft	233.6 ft
102.0ft	0.20 fc	444.4 ft	280.3 ft

■ Vert. Spread: 130.7°  
■ Horiz. Spread: 107.9°

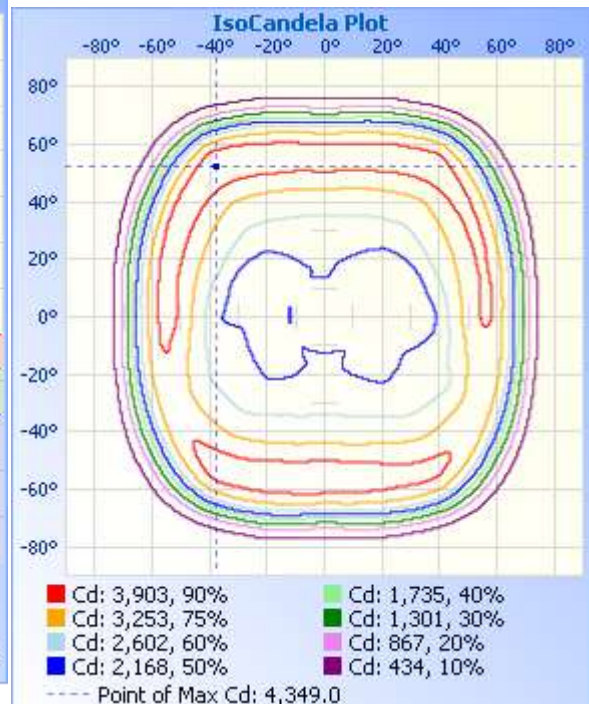
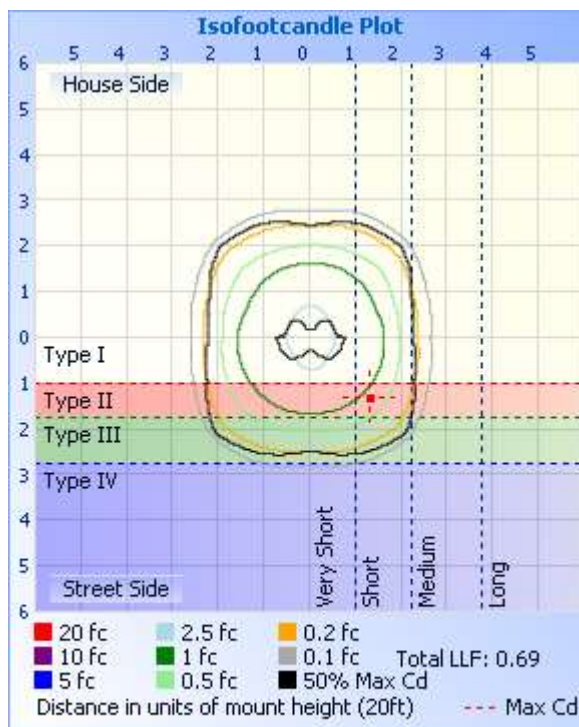


Table--1

UNIT: cd

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	2110	2110	2110	2110	2110	2110	2110	2110	2110	2110	2110	2110	2110	2110	2110	2110			
5	2116	2113	2115	2114	2117	2118	2120	2119	2121	2121	2120	2118	2117	2122	2122	2118			
10	2136	2131	2131	2133	2142	2140	2144	2147	2150	2146	2149	2148	2152	2154	2147	2142			
15	2104	2096	2100	2148	2175	2175	2130	2150	2158	2144	2139	2192	2199	2182	2121	2105			
20	2025	1999	1979	2126	2228	2169	1999	2023	2052	2021	2011	2189	2263	2173	1998	2003			
25	2089	2038	2026	2207	2301	2256	2046	2060	2130	2086	2084	2281	2356	2276	2064	2072			
30	2089	2004	2106	2332	2414	2366	2137	2063	2157	2200	2196	2402	2487	2396	2161	2172			
35	2057	2148	2310	2492	2582	2526	2337	2190	2153	2310	2327	2561	2686	2559	2290	2258			
40	2279	2549	2534	2711	2868	2755	2577	2638	2349	2444	2499	2817	2997	2800	2452	2348			
45	2943	2942	2769	3063	3298	3121	2848	3064	3035	2640	2763	3194	3459	3177	2676	2474			
50	3596	3408	3152	3558	3835	3617	3268	3560	3728	2960	3207	3720	3984	3675	3106	2769			
55	3970	3884	3709	4044	4174	4109	3819	4018	4092	3537	3788	4140	4280	4061	3644	3365			
60	3612	3911	4193	4125	3968	4172	4314	4085	3653	3708	4161	4147	4042	4063	4042	3636			
65	2349	2928	3959	3501	3035	3525	4118	3039	2406	2807	3845	3485	3065	3391	3786	2834			
70	1031	1425	2590	2142	1507	2091	2637	1503	1084	1427	2353	2147	1567	2033	2316	1414			
75	273	380	864	809	539	790	894	422	310	404	741	786	548	727	738	380			
80	64.0	81.0	172	196	171	205	198	103	85.0	97.1	151	211	171	187	128	77.4			
85	25.9	32.8	43.7	46.6	44.3	49.7	49.8	38.2	30.3	31.0	34.6	46.4	37.9	38.7	27.4	26.0			
90	13.7	19.8	27.3	25.8	21.8	24.9	28.4	22.9	16.1	14.0	10.6	6.55	3.14	4.53	8.40	11.8			
95	12.4	19.1	26.3	20.4	18.1	19.5	26.8	20.5	12.6	9.36	6.27	3.62	1.65	3.47	6.23	9.35			
100	11.8	18.0	21.3	18.2	16.8	17.7	21.8	19.3	12.1	8.11	6.46	3.97	2.19	3.82	6.34	8.07			
105	12.1	15.9	18.0	15.5	15.1	15.4	18.8	16.7	12.5	7.63	6.89	4.46	3.09	4.46	6.87	7.62			
110	12.4	14.1	14.6	14.9	14.0	14.8	14.9	15.0	12.7	7.39	6.91	5.84	4.00	5.69	7.03	7.56			
115	12.0	11.6	12.1	13.2	14.2	13.4	11.3	12.3	12.3	7.18	6.94	6.24	4.82	6.11	7.11	7.38			
120	12.4	10.0	9.75	11.5	11.9	11.2	9.33	10.4	12.7	9.46	5.93	6.56	5.25	6.40	5.84	9.73			
125	10.1	7.58	8.25	9.86	7.94	9.19	8.13	7.97	10.9	11.2	3.95	6.71	5.39	6.72	4.70	11.1			
130	6.62	6.20	8.21	7.75	6.53	6.95	7.43	6.36	6.60	11.1	4.65	4.94	5.08	5.44	5.36	10.3			
135	5.05	4.89	10.3	5.09	5.57	5.21	8.02	4.84	4.66	5.47	5.55	3.81	4.08	4.55	5.92	5.30			
140	3.98	4.03	10.9	3.84	5.04	3.63	9.57	3.93	3.78	3.31	3.65	3.17	3.62	3.28	3.76	3.73			
145	3.39	4.81	8.57	3.04	4.40	3.15	9.22	4.86	2.58	2.93	2.72	2.56	3.28	3.11	3.04	3.02			
150	2.80	8.83	4.89	2.72	3.57	2.64	4.04	6.84	2.08	2.61	2.21	2.29	2.84	2.94	2.37	3.04			
155	5.56	6.50	2.64	2.37	2.67	2.59	2.41	4.70	3.73	2.96	2.08	2.11	2.42	2.35	2.13	2.88			
160	4.03	3.10	2.48	2.71	2.58	2.63	2.72	3.13	3.09	2.99	2.25	2.35	2.47	2.65	2.70	2.14			
165	3.12	2.88	2.78	2.69	2.48	3.25	3.71	3.37	3.50	3.47	3.20	3.14	2.86	3.55	3.51	3.29			
170	3.10	2.88	2.67	2.86	3.25	3.74	4.12	3.65	4.64	4.52	4.22	3.92	4.16	4.02	4.20	3.76			
175	3.09	2.88	2.65	2.74	3.17	3.72	4.16	4.68	4.00	4.08	4.19	3.94	4.05	4.08	4.06	3.74			
180	3.71	4.07	3.82	3.18	2.77	3.45	4.04	4.46	3.62	3.44	3.74	3.27	3.32	3.06	3.58	3.56			



## 2.3 Electrical, Photometric and Chromaticity Measurements

Test date	2019-03-19	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AOK-120WiP-NV-L3-00-5780-T5-A		

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE180920-OTD2	120.0	60	1.015	121.2	0.9950	5.26
	277.0	60	0.4447	119.1	0.9669	7.78

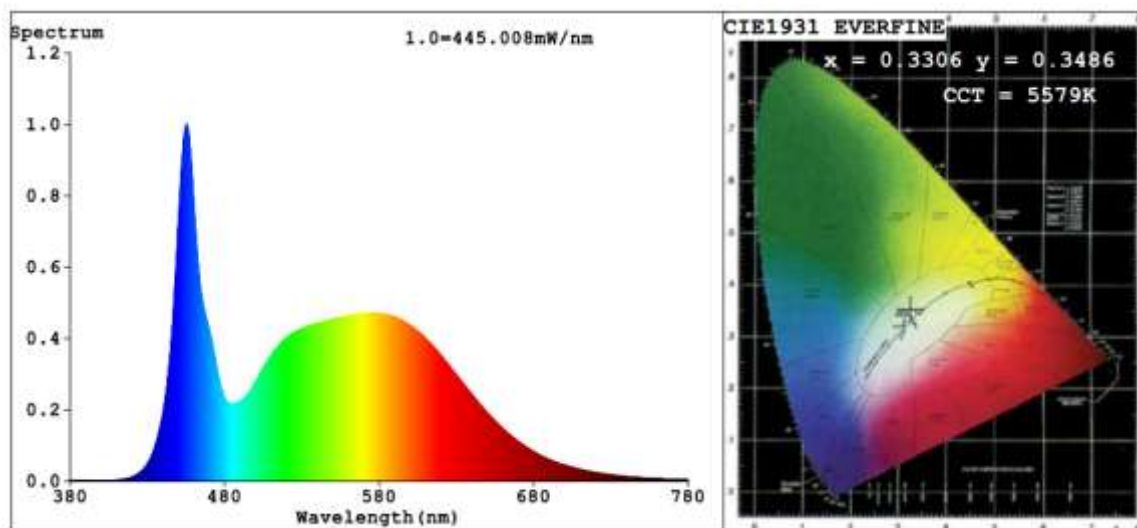
### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	2
Frequency (Hz)	60	R2	90	R10	74
CCT (K)	5579	R3	94	R11	77
Duv	0.0046	R4	79	R12	54
Chromaticity (x, y)	x=0.3306 y=0.3486	R5	80	R13	84
Chromaticity (u', v')	u'=0.2028 v'=0.4811	R6	84	R14	97
Color Rendering Index (CRI)	82.3	R7	86	R15	75
R9	2	R8	65	--	--

### Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	13676	13421
Luminous Efficacy (lm/W)	112.84	112.69

## Spectral Power Distribution & Chromaticity Diagram



#### .4 Performance Assessment:

Model name	CCT(K)	Total Luminous (lm)	Power (W)	Luminous Efficacy (lm/W)
AOK-120WiP-NV-L3-00-3080-T5-A	3000K	13059	120.8	108.10
AOK-120WiP-NV-L3-00-3580-T5-A	3000K	13182 <sup>*1</sup>	121.0 <sup>*2</sup>	108.95 <sup>*3</sup>
AOK-120WiP-NV-L3-00-4080-T5-A	4000K	13306 <sup>*1</sup>	121.0 <sup>*2</sup>	109.97 <sup>*3</sup>
AOK-120WiP-NV-L3-00-5080-T5-A	5000K	13553 <sup>*1</sup>	121.0 <sup>*2</sup>	112.00 <sup>*3</sup>
AOK-120WiP-NV-L3-00-5780-T5-A	5700K	13676	121.2	112.84

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

$$13182 = (13676 - 13059) / 5 * 1 + 13059$$

$$13306 = (13676 - 13059) / 5 * 2 + 13059$$

$$13553 = (13676 - 13059) / 5 * 4 + 13059$$

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

$$121.00 = (120.8 + 121.2) / 2$$

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

$$108.95 = 13182 / 121.00$$

$$109.97 = 13306 / 121.00$$

$$112.00 = 13553 / 121.00$$

### 3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-702	2 meter Integrating Sphere	Verified by D204 standard lamp	
ST-R-701	Spectral analysis system HAAS-2000	Verified by D204 standard lamp	
ST-R-705	Standard Lamp	2019-02-07	2020-02-06
ST-R-704	Power Meter for Integrating Sphere	2019-01-06	2020-01-05
ST-R-714	Goniophotometer system	Verified by D908S standard lamp	
ST-R-710	Standard Lamp	2019-02-12	2020-02-11
ST-R-711	Power Meter for Goniophotometer	2019-01-06	2020-01-05
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

#### 4. Product Photo



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