

## **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

**Model name(s):**

**AOK-75WiP-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-75WiP-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-75WiP-NV-L3-00-3080-T5-A AOK-75WiP-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-OTC1(3000K) JAE180920-OTC2(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	75W
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

#### 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 Summary of Test Result

Criteria Item	Measured Value			Compliance	Requirement (DLC V4.4)	
Power (W)	3000K	120V	74.74	N/A	N/A	
		277V	75.90			
	5700K	120V	74.20			
		277V	75.10			
Power Factor	3000K	120V	0.9965	Pass	>= 0.9(-3%)	
		277V	0.9420			
	5700K	120V	0.9971			
		277V	0.9490			
THD %	3000K	120V	8.23	Pass	<= 20(+5)	
		277V	7.91			
	5700K	120V	8.11			
		277V	7.82			
CRI	3000K	82.5		Pass	>= 65(-2)	
	5700K	82.3				
CCT (K)	3000K	3071		Pass	<=5700K	
	5700K	5550				
Luminous Intensity Distribution	Zonal lumens in the 0-90 °		99.6%	Pass	>= 100(-1)	
	Zonal lumens in the 80-90 °		0.5%	Pass	<= 10(+3)	
Total Luminous	3000K	120V	8514.3	Pass	>=1000(-10%)	
		277V	8492.3			
	5700K	120V	9461			
		277V	9576			
Luminous Efficacy	3000K	120V	113.92	Pass	Standard: >= 95(-3%)	Premium: >= 115(-3%)
		277V	111.89			
	5700K	120V	127.51			
		277V	127.51			

## 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-75WiP-NV-L3-00-3080-T5-A		

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
IAE180920-	119.9	60	0.6250	74.74	0.9965	8.23
OTC1	277.1	60	0.2909	75.90	0.9420	7.91

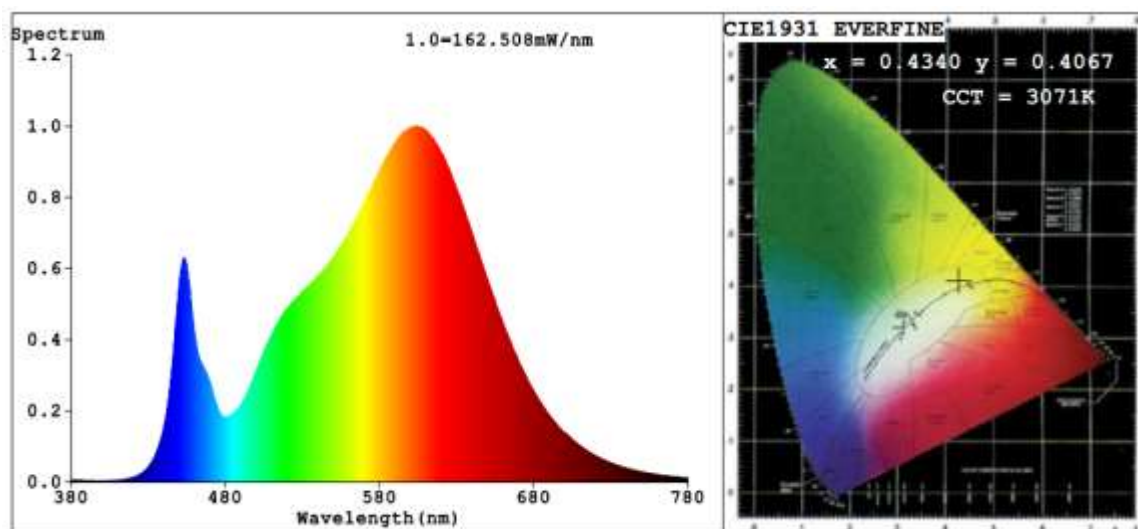
### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	6
Frequency (Hz)	60	R2	90	R10	78
CCT (K)	3071	R3	97	R11	79
Duv	0.0015	R4	80	R12	65
Chromaticity (x, y)	x=0.4340 y=0.4067	R5	82	R13	83
Chromaticity (u', v')	u'=0.2476 v'=0.5220	R6	88	R14	99
Color Rendering Index (CRI)	82.5	R7	83	R15	73
R9	6	R8	59	--	--

### Photometric Measurement – Goniophotometer Method:

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	8514.3	8492.3
Luminous Efficacy (lm/W)	113.92	111.89
Zonal lumens in the 0-90 °	99.6%	--
Zonal lumens in the 80-90 °	0.5%	--
Beam Angle (°)	142.1	--
Center Beam Candle Power (cd)	1338	--

## Spectral Power Distribution & Chromaticity Diagram



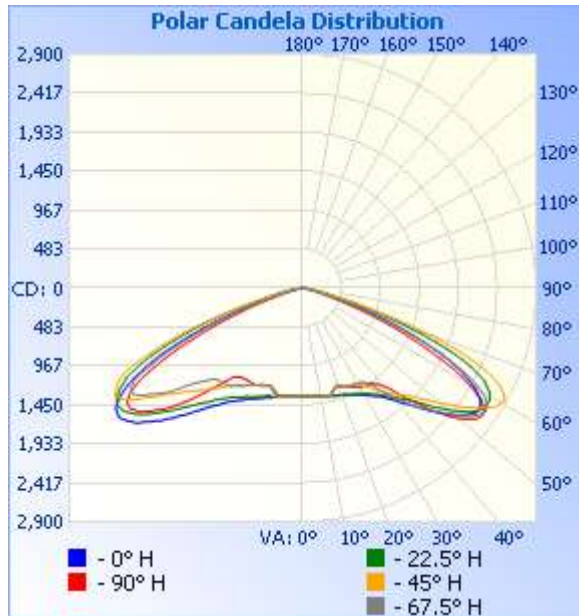
## Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,154.2	13.6%
0-40	2,133.1	25.1%
0-60	5,954.8	69.9%
60-90	2,527.4	29.7%
70-100	548.8	6.4%
90-120	22.3	0.3%
0-90	8,482.2	99.6%
90-180	32.0	0.4%
0-180	8,514.3	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	129.0	1.5%	90-100	9.1	0.1%
10-20	383.4	4.5%	100-110	7.3	0.1%
20-30	641.8	7.5%	110-120	6.0	0.1%
30-40	978.8	11.5%	120-130	4.4	0.1%
40-50	1,540.3	18.1%	130-140	2.6	0%
50-60	2,281.5	26.8%	140-150	1.5	0%
60-70	1,987.7	23.3%	150-160	0.8	0%
70-80	498.0	5.8%	160-170	0.4	0%
80-90	41.7	0.5%	170-180	0.1	0%



## Photometric Data



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
17.0ft	4.63 fc	73.3 ft	45.9 ft
34.0ft	1.16 fc	146.5 ft	91.8 ft
51.0ft	0.51 fc	219.8 ft	137.7 ft
68.0ft	0.29 fc	293.0 ft	183.6 ft
85.0ft	0.19 fc	366.3 ft	229.6 ft
102.0ft	0.13 fc	439.5 ft	275.5 ft

■ Vert. Spread: 130.2°  
■ Horiz. Spread: 107.0°

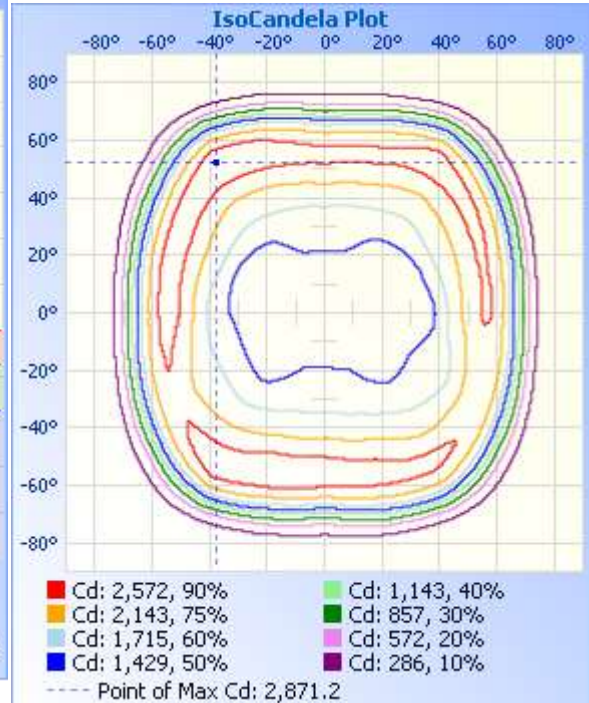
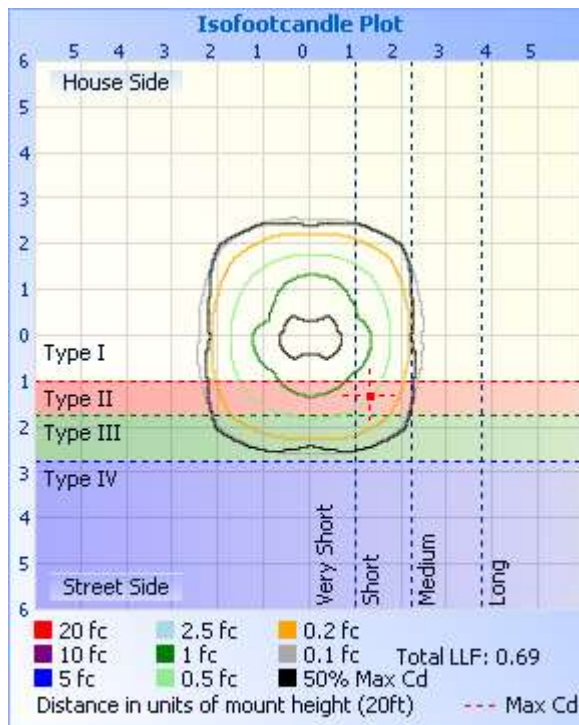


Table--1

UNIT: cd

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	1338	1338	1338	1338	1338	1338	1338	1338	1338	1338	1338	1338	1338	1338	1338	1338			
5	1343	1339	1341	1346	1349	1343	1346	1347	1338	1343	1340	1349	1349	1348	1354	1351			
10	1353	1356	1344	1358	1355	1359	1357	1370	1360	1371	1369	1361	1372	1366	1370	1365			
15	1330	1327	1319	1374	1379	1380	1360	1358	1363	1364	1367	1390	1397	1401	1356	1341			
20	1280	1278	1266	1396	1411	1414	1296	1299	1286	1297	1292	1432	1451	1426	1285	1288			
25	1328	1299	1290	1430	1464	1447	1328	1349	1349	1345	1331	1489	1512	1484	1327	1330			
30	1328	1281	1337	1506	1534	1512	1372	1363	1409	1418	1390	1572	1604	1558	1394	1394			
35	1349	1391	1500	1597	1638	1602	1533	1468	1443	1547	1494	1694	1748	1667	1466	1475			
40	1538	1674	1641	1744	1826	1776	1706	1774	1595	1708	1689	1900	1973	1847	1619	1518			
45	1943	1911	1794	1993	2116	1996	1897	2095	2026	1839	1908	2180	2277	2099	1792	1603			
50	2345	2240	2059	2300	2447	2339	2210	2439	2511	2069	2225	2547	2584	2417	2032	1887			
55	2610	2564	2423	2595	2657	2646	2582	2713	2732	2446	2535	2796	2790	2675	2362	2294			
60	2383	2609	2713	2580	2470	2682	2846	2568	2393	2470	2774	2733	2578	2652	2694	2457			
65	1543	2005	2593	2152	1832	2306	2596	1863	1546	1887	2576	2208	1919	2213	2406	1798			
70	680	948	1656	1258	932	1360	1639	847	676	906	1565	1300	965	1348	1443	883			
75	183	256	591	460	354	501	563	240	191	262	508	492	388	510	457	246			
80	48.3	64.2	136	142	124	152	129	66.2	52.1	65.2	115	159	146	161	102	61.9			
85	17.2	22.6	32.7	34.9	32.4	37.7	34.0	23.2	18.7	19.4	25.2	40.2	35.6	38.3	23.5	19.4			
90	8.76	12.8	17.0	15.4	13.2	15.3	17.1	12.8	8.93	7.34	5.10	2.57	0.75	2.61	5.36	7.55			
95	7.71	12.2	16.3	12.1	10.7	11.9	16.4	12.2	7.54	5.60	3.58	2.06	0.81	2.02	3.91	5.75			
100	7.27	11.4	13.2	10.7	9.99	10.7	13.3	11.5	7.14	4.81	3.69	2.18	1.10	2.26	3.78	4.89			
105	7.60	9.96	11.1	9.11	8.84	9.14	11.5	10.2	7.46	4.73	3.93	2.45	1.67	2.62	4.13	4.68			
110	7.81	8.80	8.83	8.88	8.29	8.92	9.05	9.29	7.81	4.51	4.17	3.26	2.24	3.34	4.24	4.59			
115	7.49	7.06	7.43	7.76	8.27	8.03	7.05	7.59	7.44	4.33	4.17	3.58	2.78	3.59	4.21	4.51			
120	7.60	6.01	5.97	6.55	6.82	6.90	5.83	6.57	8.03	5.74	3.44	3.83	2.99	3.99	3.32	5.94			
125	5.89	4.63	5.49	5.52	4.40	5.85	4.76	4.90	7.00	6.76	2.34	3.77	2.99	3.88	2.70	6.81			
130	4.00	3.81	5.80	4.23	3.50	4.05	4.56	3.87	4.13	6.96	2.72	2.77	2.98	2.90	3.19	6.09			
135	3.09	3.11	6.75	2.75	2.93	2.75	5.88	2.89	2.84	3.42	3.04	2.05	2.34	2.13	3.21	3.05			
140	2.34	2.35	7.16	1.99	2.53	2.06	6.76	2.35	2.07	1.97	2.10	1.67	1.99	1.85	1.86	1.89			
145	1.75	3.29	6.20	1.64	2.07	1.86	6.49	2.27	1.34	1.56	1.66	1.36	1.70	1.57	1.64	1.32			
150	1.29	5.57	2.91	1.34	1.83	1.51	1.96	5.18	1.10	1.30	1.14	1.26	1.28	1.36	1.11	1.16			
155	3.03	4.41	1.24	1.23	1.37	1.32	1.27	3.57	1.69	1.30	1.04	1.18	1.22	1.24	1.07	1.05			
160	1.89	1.60	1.29	1.22	1.32	1.29	1.70	1.41	1.37	1.19	1.19	1.21	1.22	1.19	1.08	0.95			
165	1.51	1.48	1.28	1.21	1.32	1.29	1.51	1.85	1.55	1.39	1.67	1.28	1.29	1.24	1.27	1.30			
170	1.53	1.67	1.27	1.34	1.33	1.29	1.43	1.81	1.67	1.58	1.63	1.34	1.31	1.30	1.34	1.32			
175	1.55	1.62	1.27	1.32	1.35	1.29	1.35	1.65	1.45	1.67	1.59	1.27	1.32	1.32	1.28	1.28			
180	1.34	1.44	1.26	1.32	1.32	1.35	1.27	1.49	1.40	1.43	1.51	1.27	1.32	1.32	1.30	1.32			



## 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-75WiP-NV-L3-00-5780-T5-A		

### Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE180920-OTC2	120.0	60	0.6201	74.20	0.9971	8.11
	277.0	60	0.2857	75.10	0.9490	7.82

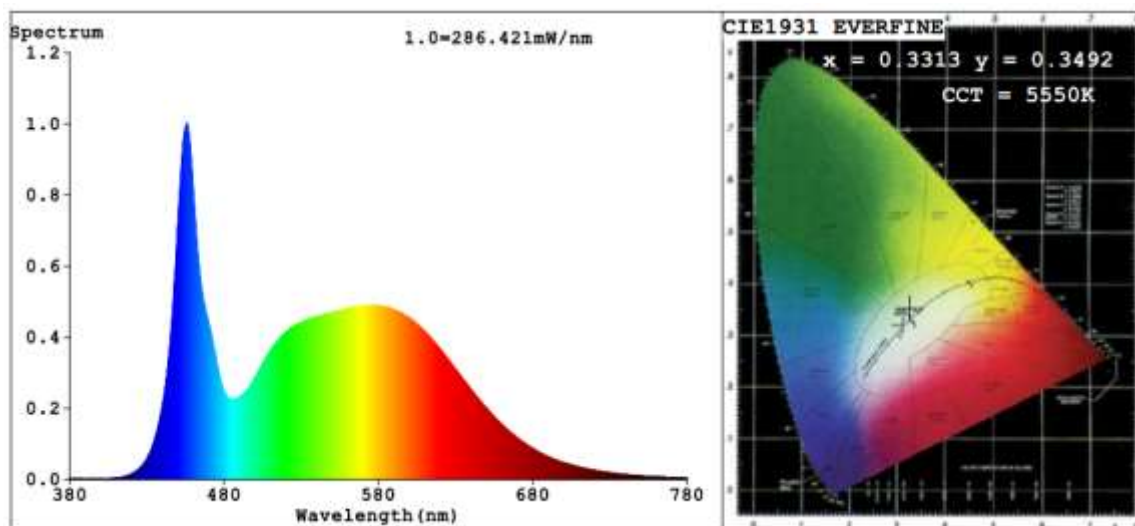
### Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	2
Frequency (Hz)	60	R2	90	R10	74
CCT (K)	5550	R3	94	R11	77
Duv	0.0046	R4	79	R12	55
Chromaticity (x, y)	x=0.3313 y=0.3492	R5	80	R13	83
Chromaticity (u', v')	u'=0.2030 v'=0.4814	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)	9461	9576
Luminous Efficacy (lm/W)	127.51	127.51

**Spectral Power Distribution & Chromaticity Diagram**



#### .4 Performance Assessment:

Model name	CCT(K)	Total Luminous (lm)	Power (W)	Luminous Efficacy (lm/W)
AOK-75WiP-NV-L3-00-3080-T5-A	3000K	8514.3	74.7	113.92
AOK-75WiP-NV-L3-00-3580-T5-A	4000K	8704 <sup>*1</sup>	74.45 <sup>*2</sup>	116.91 <sup>*3</sup>
AOK-75WiP-NV-L3-00-4080-T5-A	4000K	8893 <sup>*1</sup>	74.45 <sup>*2</sup>	119.45 <sup>*3</sup>
AOK-75WiP-NV-L3-00-5080-T5-A	5000K	9272 <sup>*1</sup>	74.45 <sup>*2</sup>	124.54 <sup>*3</sup>
AOK-75WiP-NV-L3-00-5780-T5-A	5700K	9461	74.2	129.82

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

$$8704 = (9461 - 8514.3) / 5 * 1 + 8514.3$$

$$8893 = (9461 - 8514.3) / 5 * 2 + 8514.3$$

$$9272 = (9461 - 8514.3) / 5 * 4 + 8514.3$$

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

$$74.45 = (74.7 + 74.2) / 2$$

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

$$116.91 = 8704 / 74.45$$

$$119.45 = 8893 / 74.45$$

$$124.54 = 9272 / 74.45$$

### 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 \*\*\*\*\***