

**LM-79-08 Test Report**

For

**Antec Lighting Inc****(Brand Name: )**

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

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

Model name(s): AOK-180WoT-NV-L5-XX-XX70-T402-P

Remark: The first "XX" can be "00" for without sensor or "SN" for with sensor function or "PH" for Plug-In photocontrol, The last "XX" represents different CCT as below: 30=3000K,35=3500K,40=4000K,45=4500K,50=5000K,57=5700K.

Representative (Tested) Model: AOK-180WoT-NV-L5-00-3070-T402-P  
AOK-180WoT-NV-L5-00-5770-T402-P

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

Test &amp; Report By:

*Bill Luo*

Engineer: Bill Luo

Date: Feb.26,2018

Review By:

*Univ Xie*

Manager: Univ Xie

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	<b>AOK</b>	
Model Number	AOK-180WoT-NV-L5-XX-XX70-T402-P	
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	180W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,3500K,4000K,4500K,5000K,5700K	
LED Manufacturer	Lumileds	
LED Model	L150-3070502400000, L150-5770502400000	
Sample Number	GZE1711117-H1(3000K), H2(5700K)	
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	Dec.08,2017
Date of Test	Feb.07,2018
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  $5^{\circ}$  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>	2018-02-07	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	AOK-180W <sub>o</sub> T-NV-L5-00-3070-T402-P		

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE1711117	120.0	60	1.5474	185.3	0.9979	5.41
-H1	277.0	60	0.6836	180.1	0.9511	5.84
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

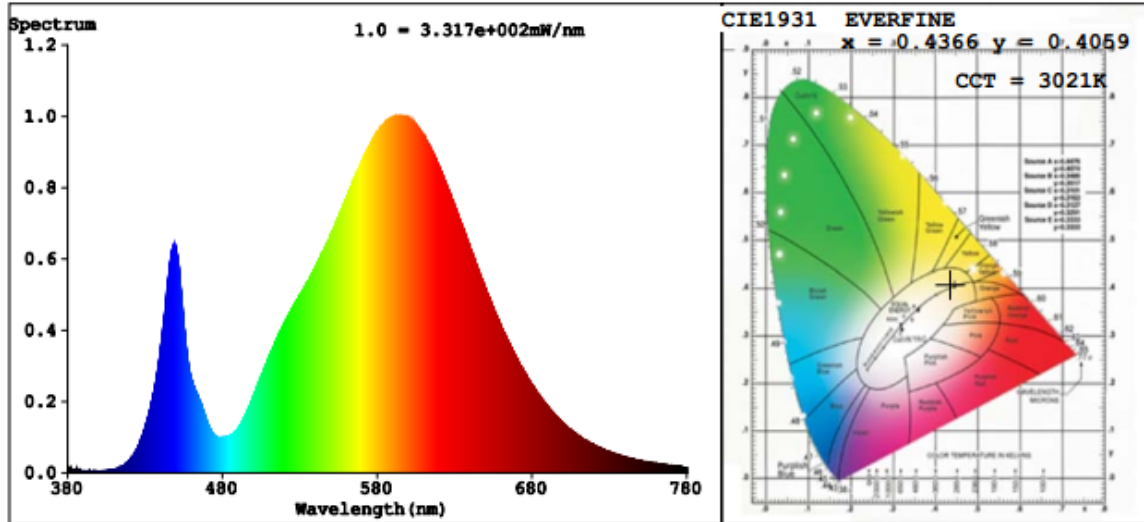
**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	69	R9	0
Frequency (Hz)	60	R2	82	R10	58
CCT (K)	3021	R3	93	R11	64
Duv	0.0008	R4	69	R12	48
Chromaticity (x, y)	x=0.4366 y=0.4059	R5	68	R13	71
Chromaticity (u', v')	u'=0.2496 v'=0.5221	R6	74	R14	96
Color Rendering Index (CRI)	72.7	R7	79	R15	62
R9	0	R8	48	--	--

**Photometric Measurement – Goniophotometer Method:**

Parameter	Result		DLC V4.2 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	29970	29232	≥10000(-10%)	
Luminous Efficacy (lm/W)	161.74	162.31	Standard: ≥100(-3%)	Premium: ≥120(-3%)
Most Worst Luminous/Highest Watts	157.75			
Zonal lumens in the 0-90° zone (%)	100	--	≥100(-1)	
Zonal lumens in the 80-90° zone (%)	1.8	--	≤10(+3)	
Beam Angle (°)	97.4	--	--	
Center Beam Candle Power (cd)	6899	--	--	

**Spectral Power Distribution & Chromaticity Diagram**

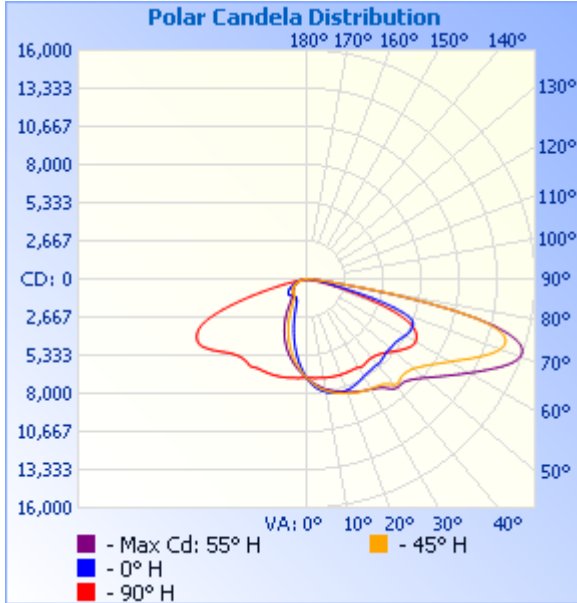


**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	5,199.6	17.4%
0-40	8,737.6	29.2%
0-60	18,546.0	61.9%
60-90	11,422.7	38.1%
70-100	4,997.8	16.7%
90-120	0	0%
0-90	29,968.7	100%
90-180	0	0%
0-180	29,968.7	100%

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-10	649.5	2.2%	90-100	0	0%
10-20	1,823.0	6.1%	100-110	0	0%
20-30	2,727.1	9.1%	110-120	0	0%
30-40	3,538.0	11.8%	120-130	0	0%
40-50	4,388.9	14.6%	130-140	0	0%
50-60	5,419.5	18.1%	140-150	0	0%
60-70	6,424.9	21.4%	150-160	0	0%
70-80	4,465.3	14.9%	160-170	0	0%
80-90	532.5	1.8%	170-180	0	0%

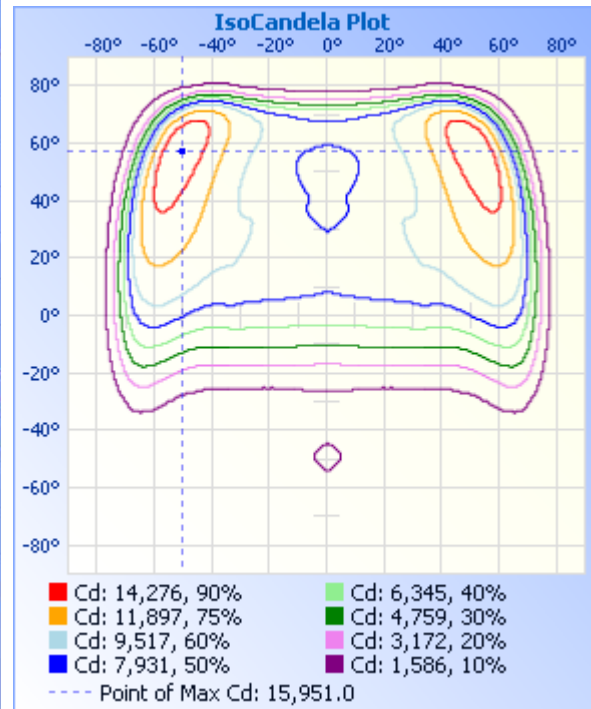
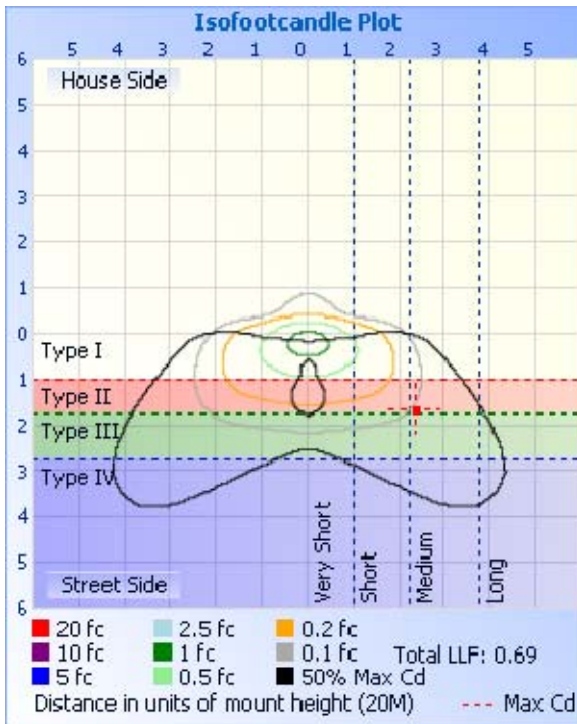
**Photometric Data**



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
3.33M	57.6 fc	4.95 M	12.93 M
6.67M	14.4 fc	9.90 M	25.85 M
10.00M	6.41 fc	14.85 M	38.79 M
13.33M	3.61 fc	19.79 M	51.71 M
16.67M	2.31 fc	24.74 M	64.64 M
20.00M	1.60 fc	29.69 M	77.57 M

Vert. Spread: 73.2°  
 Horiz. Spread: 125.4°



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: ×10cd

C (DEG) \ γ (DEG)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
0	690	690	690	690	690	690	690	690	690	690	690	690	690	690	690	690	690	690	690
5	694	702	709	717	723	730	735	740	744	748	752	754	757	759	761	763	764	764	763
10	700	716	730	743	753	764	776	783	787	792	796	800	802	803	804	804	804	804	803
15	706	729	748	764	783	796	804	814	821	825	829	830	832	831	830	829	826	826	823
20	710	740	766	791	809	821	833	842	847	851	852	853	851	848	844	839	833	832	826
25	711	751	784	812	831	848	860	867	871	872	871	867	859	852	844	834	824	821	813
30	715	764	805	836	857	875	886	890	892	887	882	871	859	846	832	819	806	798	792
35	719	786	843	883	913	930	933	927	919	903	889	869	851	834	819	806	792	783	779
40	714	791	858	904	942	967	981	989	985	962	932	898	868	845	825	807	791	780	776
45	737	839	920	973	1009	1024	1019	1003	978	951	926	904	880	852	826	806	787	772	765
50	788	911	1007	1071	1108	1119	1107	1074	1028	975	929	893	864	840	818	797	781	769	759
55	847	992	1102	1179	1223	1235	1219	1179	1118	1047	982	928	885	851	824	801	783	771	766
60	879	1047	1182	1282	1345	1366	1352	1312	1243	1155	1070	995	934	889	854	828	810	800	793
65	836	1025	1194	1333	1430	1483	1494	1468	1402	1299	1182	1082	1003	943	895	858	832	820	812
70	628	790	970	1168	1359	1500	1576	1591	1544	1439	1293	1148	1031	943	872	817	780	761	757
75	262	332	431	598	849	1125	1341	1455	1469	1399	1241	1022	817	665	548	464	411	385	380
80	58.3	78.6	111	147	201	304	477	623	679	645	522	355	228	168	141	133	118	114	111
85	18.1	22.8	27.0	38.5	54.2	67.1	73.8	80.4	87.1	94.0	90.9	88.1	85.8	80.4	75.0	70.6	67.3	65.4	64.9
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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--2

UNIT: \*10ed

C (DEG) \ y (DEG)	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185
0	690	690	690	690	690	690	690	690	690	690	690	690	690	690	690	690	690	690	690
5	764	764	763	761	759	757	754	752	748	744	740	735	730	723	717	709	702	694	685
10	804	804	804	804	803	802	800	796	792	787	783	776	764	753	743	730	716	700	683
15	826	826	829	830	831	832	830	829	825	821	814	804	796	783	764	748	729	706	680
20	832	833	839	844	848	851	853	852	851	847	842	833	821	809	791	766	740	710	675
25	821	824	834	844	852	859	867	871	872	871	867	860	848	831	812	784	751	711	667
30	798	806	819	832	846	859	871	882	887	892	890	886	875	857	836	805	764	715	662
35	783	792	806	819	834	851	869	889	903	919	927	933	930	913	883	843	786	719	647
40	780	791	807	825	845	868	898	932	962	985	989	981	967	942	904	858	791	714	624
45	772	787	806	826	852	880	904	926	951	978	1003	1019	1024	1009	973	920	839	737	620
50	769	781	797	818	840	864	893	929	975	1028	1074	1107	1119	1108	1071	1007	911	788	639
55	771	783	801	824	851	885	928	982	1047	1118	1179	1219	1235	1223	1179	1102	992	847	669
60	800	810	828	854	889	934	995	1070	1155	1243	1312	1352	1366	1345	1282	1182	1047	879	677
65	820	832	858	895	943	1003	1082	1182	1299	1402	1468	1494	1483	1430	1333	1194	1025	836	631
70	761	780	817	872	943	1031	1148	1293	1439	1544	1591	1576	1500	1359	1168	970	790	628	462
75	385	411	464	548	665	817	1022	1241	1399	1469	1455	1341	1125	849	598	431	332	262	186
80	114	118	133	141	168	228	355	522	645	679	623	477	304	201	147	111	78.6	58.3	43.1
85	65.4	67.3	70.6	75.0	80.4	85.8	88.1	90.9	94.0	87.1	80.4	73.8	67.1	54.2	38.5	27.0	22.8	18.1	14.0
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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--3

UNIT: ×10ed

C (DEG) \ γ (DEG)	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280
0	690	690	690	690	690	690	690	690	690	690	690	690	690	690	690	690	690	690	690
5	677	668	660	652	645	637	630	623	617	611	605	601	597	594	592	590	588	590	592
10	665	647	631	614	596	580	565	549	536	523	511	502	493	486	481	478	473	478	481
15	653	625	598	571	544	517	491	467	444	425	407	392	379	369	362	357	351	357	362
20	638	601	562	522	484	446	411	379	349	321	297	278	261	249	240	234	229	234	240
25	620	571	519	466	416	369	324	283	246	215	193	179	171	166	164	163	162	163	164
30	603	539	472	406	343	283	232	192	167	156	152	150	149	149	149	150	150	150	149
35	570	490	409	330	257	199	163	150	145	143	143	144	145	146	147	148	147	148	146
40	532	434	339	250	185	152	142	139	138	138	139	141	144	147	149	150	151	150	149
45	499	379	267	185	146	136	133	132	133	134	137	141	146	150	154	157	160	157	154
50	481	328	207	145	128	125	125	125	127	130	134	139	145	150	155	159	163	159	155
55	477	290	166	122	115	114	115	117	119	122	126	131	137	142	147	152	157	152	147
60	458	254	136	105	102	102	103	104	107	109	113	117	122	126	130	133	136	133	130
65	404	203	105	88.3	86.7	86.6	87.9	89.0	90.3	91.6	93.6	96.0	98.2	101	103	105	108	105	103
70	273	125	74.3	69.2	68.5	69.0	70.0	70.2	70.0	69.8	70.1	71.1	72.4	73.9	75.6	77.1	78.8	77.1	75.6
75	92.6	59.3	51.6	49.4	48.8	48.2	47.9	47.2	46.0	44.7	44.0	43.9	43.9	44.2	45.0	45.6	46.3	45.6	45.0
80	35.2	31.7	29.8	28.4	26.9	25.4	23.7	22.1	20.6	19.2	18.0	16.7	15.5	14.5	13.8	13.5	13.3	13.5	13.8
85	11.8	10.1	8.18	6.42	4.90	3.51	2.60	1.97	1.54	1.24	0.95	0.73	0.61	0.48	0.40	0.36	0.36	0.36	0.40
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table--4

UNIT: ×10cd

C (DEG) \ γ (DEG)	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355		
0	690	690	690	690	690	690	690	690	690	690	690	690	690	690	690		
5	594	597	601	605	611	617	623	630	637	645	652	660	668	677	685		
10	486	493	502	511	523	536	549	565	580	596	614	631	647	665	683		
15	369	379	392	407	425	444	467	491	517	544	571	598	625	653	680		
20	249	261	278	297	321	349	379	411	446	484	522	562	601	638	675		
25	166	171	179	193	215	246	283	324	369	416	466	519	571	620	667		
30	149	149	150	152	156	167	192	232	283	343	406	472	539	603	662		
35	145	144	143	143	143	145	150	163	199	257	330	409	490	570	647		
40	147	144	141	139	138	138	139	142	152	185	250	339	434	532	624		
45	150	146	141	137	134	133	132	133	136	146	185	267	379	499	620		
50	150	145	139	134	130	127	125	125	128	145	207	328	481	639			
55	142	137	131	126	122	119	117	115	114	115	122	166	290	477	669		
60	126	122	117	113	109	107	104	103	102	102	105	136	254	458	677		
65	101	98.2	96.0	93.6	91.6	90.3	89.0	87.9	86.6	86.7	88.3	105	203	404	631		
70	73.9	72.4	71.1	70.1	69.8	70.0	70.2	70.0	69.0	68.5	69.2	74.3	125	273	462		
75	44.2	43.9	43.9	44.0	44.7	46.0	47.2	47.9	48.2	48.8	49.4	51.6	59.3	92.6	186		
80	14.5	15.5	16.7	18.0	19.2	20.6	22.1	23.7	25.4	26.9	28.4	29.8	31.7	35.2	43.1		
85	0.48	0.61	0.73	0.95	1.24	1.54	1.97	2.60	3.51	4.90	6.42	8.18	10.1	11.8	14.0		
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

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>

**2.2 Electrical, Photometric and Chromaticity Measurements**

*(Refer to Work Instruction QD25)*

<b>Test date</b>	2018-02-07	<b>Test Ambient:</b>	25.2 ° C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	AOK-180W <sub>o</sub> T-NV-L5-00-5770-T402-P		

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE1711117	120.0	60	1.5413	184.6	0.9981	5.26
-H2	277.0	60	0.6793	179.2	0.9523	5.59
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

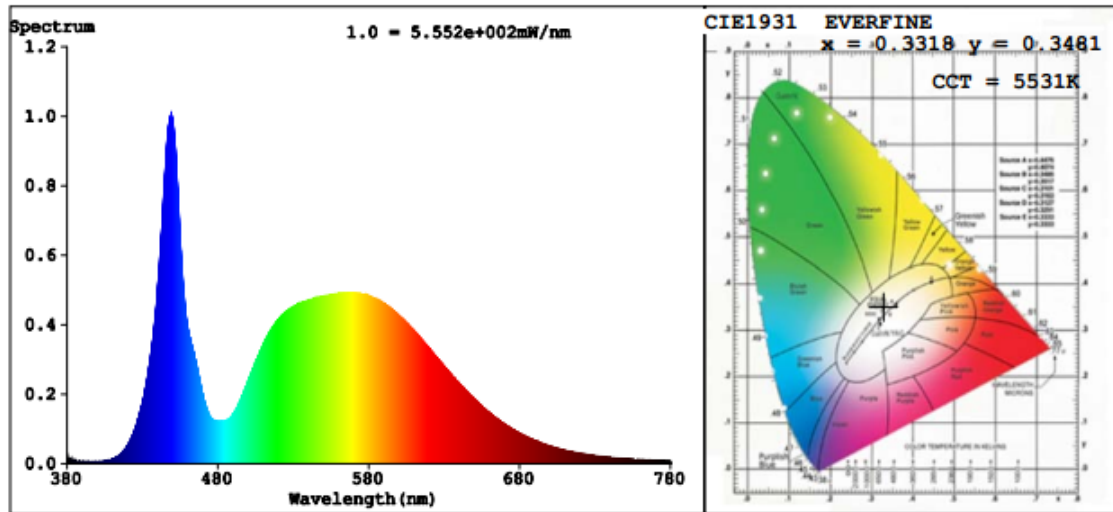
**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	73	R9	0
Frequency (Hz)	60	R2	79	R10	50
CCT (K)	5531	R3	83	R11	75
Duv	0.0039	R4	77	R12	48
Chromaticity (x, y)	x=0.3318 y=0.3481	R5	75	R13	74
Chromaticity (u', v')	u'=0.2037 v'=0.4810	R6	72	R14	91
Color Rendering Index (CRI)	75.5	R7	83	R15	68
R9	0	R8	62	--	--

**Photometric Measurement – Sphere-Spectroradiometer Method:**

Parameter	Result		DLC V4.2 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	31096	30582	>=10000(-10%)	
Luminous Efficacy (lm/W)	168.45	170.66	Standard: >=	Premium: >=
Most Worst Luminous/Highest Watts	165.67		100(-3%)	120(-3%)

**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-180W <sub>o</sub> T-NV-L5-00-3070-T402-P	3000K	29970	185.3	161.74
AOK-180W <sub>o</sub> T-NV-L5-00-3570-T402-P	3500K	30195 <sup>*1</sup>	185.0 <sup>*2</sup>	163.22 <sup>*3</sup>
AOK-180W <sub>o</sub> T-NV-L5-00-4070-T402-P	4000K	30420 <sup>*1</sup>	185.0 <sup>*2</sup>	164.43 <sup>*3</sup>
AOK-180W <sub>o</sub> T-NV-L5-00-4570-T402-P	4500K	30645 <sup>*1</sup>	185.0 <sup>*2</sup>	165.65 <sup>*3</sup>
AOK-180W <sub>o</sub> T-NV-L5-00-5070-T402-P	5000K	30870 <sup>*1</sup>	185.0 <sup>*2</sup>	166.86 <sup>*3</sup>
AOK-180W <sub>o</sub> T-NV-L5-00-5770-T402-P	5700K	31096	184.6	168.45

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

$$30195 = (31096 - 29970) / 5 + 29970$$

$$30420 = (31096 - 29970) / 5 + 30195$$

$$30645 = (31096 - 29970) / 5 + 30420$$

$$30870 = (31096 - 29970) / 5 + 30645$$

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

$$185.0 = (185.3 + 184.6) / 2$$

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

$$163.22 = 30195 / 185.0$$

$$164.43 = 30420 / 185.0$$

$$165.65 = 30645 / 185.0$$

$$166.86 = 30870 / 185.0$$



**3. Test Equipment**

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-331	2 meter Integrating Sphere	2017-07-01	2018-06-30
ST-R-327	Spectral analysis system HAAS-2000	2017-07-01	2018-06-30
D204	Standard Lamp	2017-07-12	2018-07-11
PF2010	Power Meter for Integrating Sphere	2017-07-01	2018-06-30
GO-R5000	Goniophotometer system	2017-07-01	2018-06-30
D908S	Standard Lamp	2017-07-12	2018-07-11
PF210	Power Meter for Goniophotometer	2017-07-07	2018-07-06

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 \*\*\*\*\***

**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>