LM-79-08 Test Report

For

Antec Lighting Inc

(Brand Name: AOK)

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

Outdoor Pole/Arm-Mounted Area and Roadway Luminaires

Model name(s): AOK-200WoT-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-200WoT-NV-L5-00-3070-T402-P
AOK-200WoT-NV-L5-00-5770-T402-P

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

Test & 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.

1.1 Product Information:

Organization Name	Antec Lighting Inc	
Brand Name	AOK	
Model Number	AOK-200WoT-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	200W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,3500K,4000K,4500K,5000K,5700K	
LED Manufacturer	Lumileds	
LED Model	L150-3070502400000, L150-5770502400000	
Sample Number	GZE1711117-J1(3000K), J2(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.25,2018
Test item	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	1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products 2. ANSI C78.377-2008 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
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° C ± 1° 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 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 25º C ± 1º 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 25º C ± 1º 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)

Test date	2018-02-25	Test Ambient:	25.2 º C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AOK-200WoT-NV-L5-00-3070-T402-P		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE1711117-J1	120.0	60	1.7283	206.4	0.9952	7.49
	277.0	60	0.7863	199.4	0.9155	9.47
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

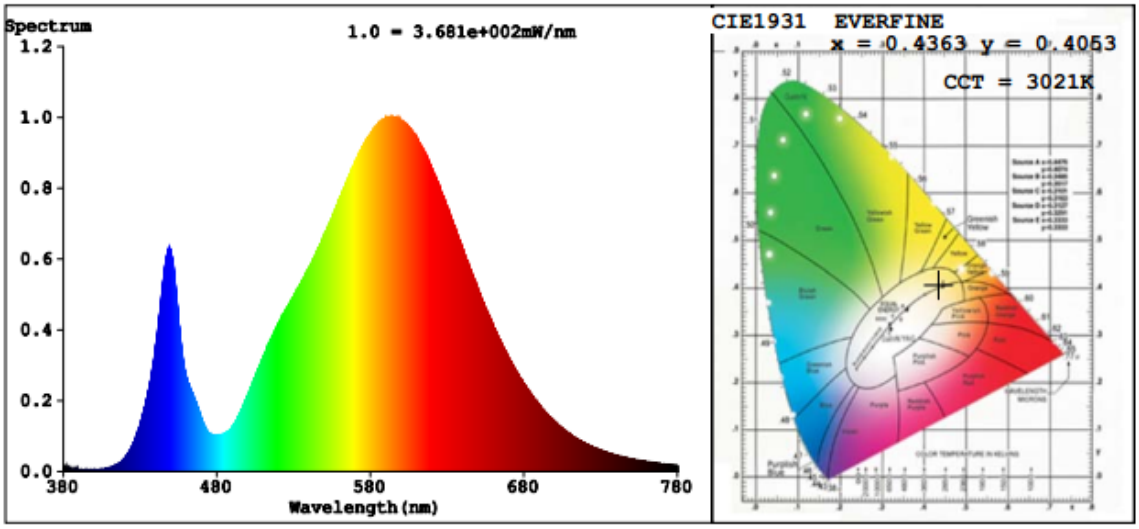
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3021
Duv	0.0006
Chromaticity (x, y)	x=0.4363 y=0.4053
Chromaticity (u', v')	u'=0.2496 v'=0.5218
Color Rendering Index (CRI)	72.7
R9	0

Special Color Rendering Indices			
R1	69	R9	0
R2	82	R10	58
R3	93	R11	63
R4	69	R12	48
R5	68	R13	71
R6	74	R14	96
R7	79	R15	62
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)	32092	31542	>=10000(-10%)	
Luminous Efficacy (lm/W)	155.48	158.18	Standard: >= 100(-3%)	Premium: >= 120(-3%)
Most Worst Luminous/Highest Watts	152.82			
Zonal lumens in the 0-90° zone (%)	100	--	>= 100(-1)	
Zonal lumens in the 80-90° zone (%)	2.0	--	<= 10(+3)	
Beam Angle (°)	98.1	--	--	
Center Beam Candle Power (cd)	7457	--	--	

Spectral Power Distribution & Chromaticity Diagram

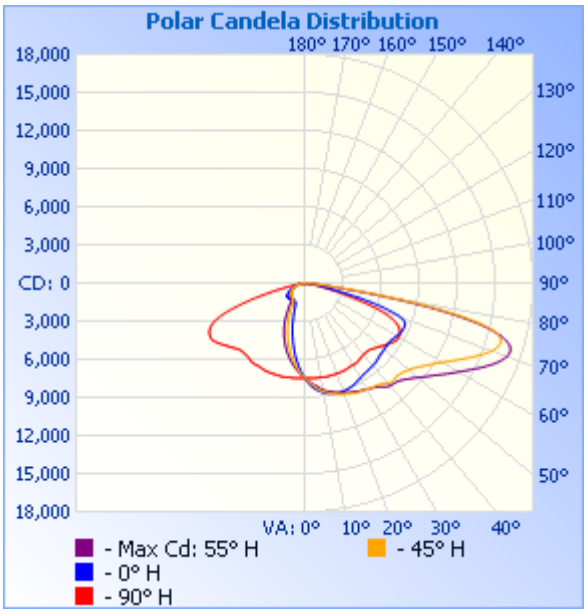


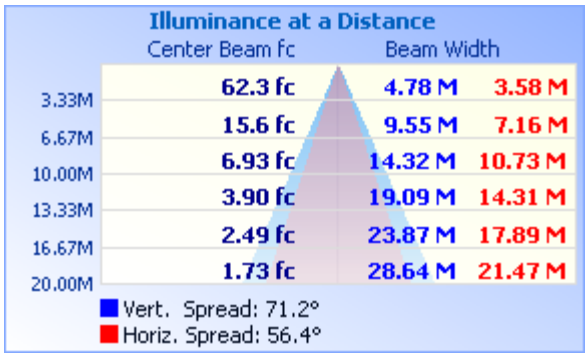
Zonal Lumen Tabulation

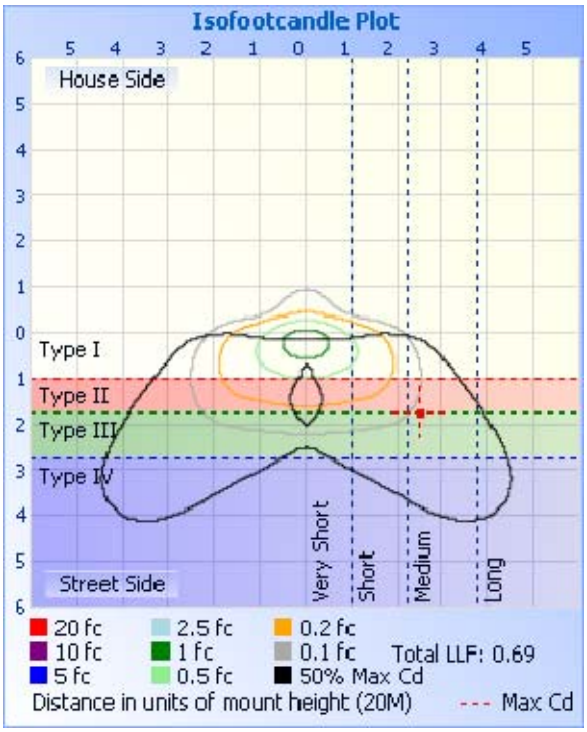
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	5,601.8	17.5%
0-40	9,377.2	29.2%
0-60	19,709.3	61.4%
60-90	12,382.2	38.6%
70-100	5,643.2	17.6%
90-120	0	0%
0-90	32,091.5	100%
90-180	0	0%
0-180	32,091.5	100%

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-10	702.7	2.2%	90-100	0	0%
10-20	1,966.8	6.1%	100-110	0	0%
20-30	2,932.4	9.1%	110-120	0	0%
30-40	3,775.3	11.8%	120-130	0	0%
40-50	4,647.2	14.5%	130-140	0	0%
50-60	5,684.9	17.7%	140-150	0	0%
60-70	6,739.0	21.0%	150-160	0	0%
70-80	5,002.4	15.6%	160-170	0	0%
80-90	640.7	2.0%	170-180	0	0%

Photometric Data







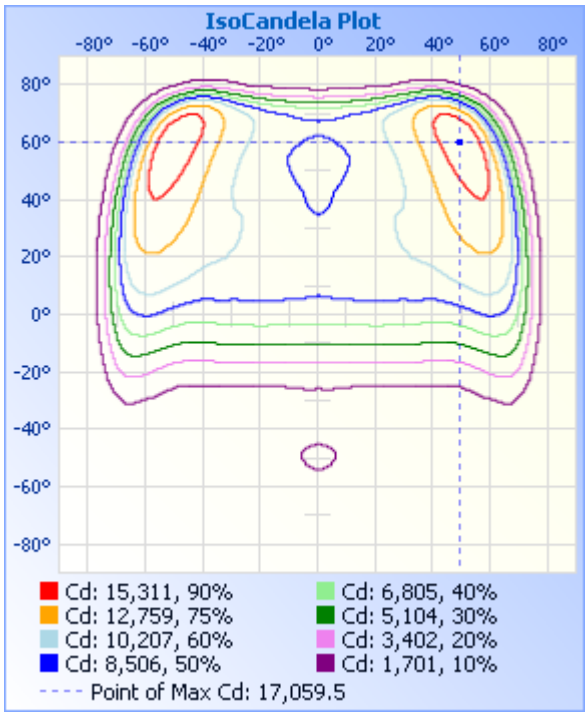


Table--1 UNIT: ×10cd

γ (DEG) \ C (DEG)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
0	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746
5	750	759	767	775	782	789	795	801	806	810	814	818	822	824	828	831	834	834	829
10	752	770	786	800	813	826	845	854	861	866	870	873	875	876	877	877	877	876	875
15	755	781	803	821	851	867	878	887	895	901	905	908	907	907	907	907	904	901	899
20	756	789	816	855	877	893	907	917	924	928	931	931	929	927	925	919	913	909	905
25	754	793	839	873	899	919	933	942	949	953	950	947	942	936	927	917	907	899	892
30	747	800	855	894	922	943	957	966	971	968	964	955	945	931	917	903	890	876	867
35	742	817	884	930	964	985	996	996	995	984	973	954	937	918	901	885	870	856	850
40	729	820	897	954	999	1027	1043	1051	1049	1027	999	969	942	917	896	877	861	845	841
45	736	860	951	1019	1064	1088	1092	1079	1060	1032	1005	979	951	921	894	871	854	836	826
50	776	920	1032	1112	1162	1184	1182	1156	1116	1064	1013	972	939	910	885	860	842	825	816
55	824	994	1122	1216	1274	1298	1293	1262	1209	1138	1065	1004	956	917	886	858	838	821	813
60	856	1049	1202	1318	1397	1432	1429	1397	1336	1248	1154	1071	1004	951	912	879	859	840	835
65	820	1030	1216	1372	1485	1550	1572	1559	1499	1401	1277	1166	1078	1009	956	912	885	864	857
70	639	819	1014	1223	1423	1578	1666	1694	1660	1564	1419	1263	1132	1030	953	892	851	824	817
75	282	368	473	643	900	1202	1452	1600	1637	1583	1433	1211	978	798	664	564	495	457	444
80	62.5	91.3	120	167	223	346	565	775	871	857	732	532	337	225	174	156	145	135	132
85	18.4	23.9	28.2	38.4	56.1	75.1	87.3	105	111	115	122	108	99.0	92.0	84.5	78.2	73.7	70.4	69.4
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--2 UNIT: ×10cd

γ (DEG) \ C (DEG)	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185
0	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746
5	834	834	831	828	824	822	818	814	810	806	801	795	789	782	775	767	759	750	740
10	876	877	877	877	876	875	873	870	866	861	854	845	826	813	800	786	770	752	733
15	901	904	907	907	907	907	908	905	901	895	887	878	867	851	821	803	781	755	727
20	909	913	919	925	927	929	931	931	928	924	917	907	893	877	855	816	789	756	718
25	899	907	917	927	936	942	947	950	953	949	942	933	919	899	873	839	793	754	702
30	876	890	903	917	931	945	955	964	968	971	966	957	943	922	894	855	800	747	689
35	856	870	885	901	918	937	954	973	984	995	996	996	985	964	930	884	817	742	669
40	845	861	877	896	917	942	969	999	1027	1049	1051	1043	1027	999	954	897	820	729	639
45	836	854	871	894	921	951	979	1005	1032	1060	1079	1092	1088	1064	1019	951	860	736	621
50	825	842	860	885	910	939	972	1013	1064	1116	1156	1182	1184	1162	1112	1032	920	776	622
55	821	838	858	886	917	956	1004	1065	1138	1209	1262	1293	1298	1274	1216	1122	994	824	635
60	840	859	879	912	951	1004	1071	1154	1248	1336	1397	1429	1432	1397	1318	1202	1049	856	638
65	864	885	912	956	1009	1078	1166	1277	1401	1499	1559	1572	1550	1485	1372	1216	1030	820	591
70	824	851	892	953	1030	1132	1263	1419	1564	1660	1694	1666	1578	1423	1223	1014	819	639	446
75	457	495	564	664	798	978	1211	1433	1583	1637	1600	1452	1202	900	643	473	368	282	179
80	135	145	156	174	225	337	532	732	857	871	775	565	346	223	167	120	91.3	62.5	42.6
85	70.4	73.7	78.2	84.5	92.0	99.0	108	122	115	111	105	87.3	75.1	56.1	38.4	28.2	23.9	18.4	14.4
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--3 UNIT: ×10cd

γ (DEG) \ C (DEG)	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280
0	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746
5	731	722	713	704	695	687	679	672	665	659	653	648	644	642	639	637	634	637	639
10	715	696	677	659	639	622	606	589	573	560	547	537	528	521	516	512	505	512	516
15	697	666	638	608	579	549	521	496	471	449	431	416	403	394	386	381	374	381	386
20	678	635	592	551	508	468	430	398	367	337	312	292	276	263	254	249	243	249	254
25	653	598	539	485	433	383	336	292	255	222	200	187	180	176	174	174	171	174	174
30	625	556	483	414	349	287	235	194	173	165	161	159	159	159	159	159	158	159	159
35	586	500	414	331	257	199	168	158	154	152	152	152	154	155	156	157	156	157	156
40	537	436	335	245	184	158	151	148	147	147	149	151	155	157	159	161	160	161	159
45	492	370	258	180	152	144	142	141	143	145	148	152	158	162	166	169	170	169	166
50	459	306	195	147	135	133	133	135	138	141	146	151	158	163	168	172	175	172	168
55	437	257	156	126	122	122	124	126	129	133	138	143	149	155	160	165	167	165	160
60	410	217	127	111	109	110	111	113	116	119	123	127	133	137	141	144	147	144	141
65	354	171	102	93.9	92.8	93.6	95.0	96.3	97.7	99.7	102	104	107	110	112	114	116	114	112
70	241	107	77.5	74.2	73.8	74.8	75.5	75.4	75.0	75.3	75.8	77.1	79.0	80.9	82.8	84.4	85.5	84.4	82.8
75	87.4	61.3	55.1	53.4	52.7	52.1	51.6	50.6	49.4	48.5	47.9	48.0	48.3	48.7	49.5	50.3	50.5	50.3	49.5
80	37.0	34.1	32.2	30.7	29.0	27.5	25.6	24.0	22.4	21.0	19.6	18.3	17.1	16.1	15.4	15.1	14.8	15.1	15.4
85	12.7	10.8	8.86	7.04	5.39	3.97	2.98	2.26	1.71	1.31	1.00	0.81	0.64	0.49	0.43	0.40	0.36	0.40	0.43
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

γ (DEG) \ C (DEG)	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355		
0	746	746	746	746	746	746	746	746	746	746	746	746	746	746	746		
5	642	644	648	653	659	665	672	679	687	695	704	713	722	731	740		
10	521	528	537	547	560	573	589	606	622	639	659	677	696	715	733		
15	394	403	416	431	449	471	496	521	549	579	608	638	666	697	727		
20	263	276	292	312	337	367	398	430	468	508	551	592	635	678	718		
25	176	180	187	200	222	255	292	336	383	433	485	539	598	653	702		
30	159	159	159	161	165	173	194	235	287	349	414	483	556	625	689		
35	155	154	152	152	152	154	158	168	199	257	331	414	500	586	669		
40	157	155	151	149	147	147	148	151	158	184	245	335	436	537	639		
45	162	158	152	148	145	143	141	142	144	152	180	258	370	492	621		
50	163	158	151	146	141	138	135	133	133	135	147	195	306	459	622		
55	155	149	143	138	133	129	126	124	122	122	126	156	257	437	635		
60	137	133	127	123	119	116	113	111	110	109	111	127	217	410	638		
65	110	107	104	102	99.7	97.7	96.3	95.0	93.6	92.8	93.9	102	171	354	591		
70	80.9	79.0	77.1	75.8	75.3	75.0	75.4	75.5	74.8	73.8	74.2	77.5	107	241	446		
75	48.7	48.3	48.0	47.9	48.5	49.4	50.6	51.6	52.1	52.7	53.4	55.1	61.3	87.4	179		
80	16.1	17.1	18.3	19.6	21.0	22.4	24.0	25.6	27.5	29.0	30.7	32.2	34.1	37.0	42.6		
85	0.49	0.64	0.81	1.00	1.31	1.71	2.26	2.98	3.97	5.39	7.04	8.86	10.8	12.7	14.4		
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		

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2018-02-25	Test Ambient:	25.2 º C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AOK-200WoT-NV-L5-00-5770-T402-P		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE1711117-J2	120.0	60	1.7165	204.6	0.9933	7.15
	277.0	60	0.7848	199.3	0.9168	9.62
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

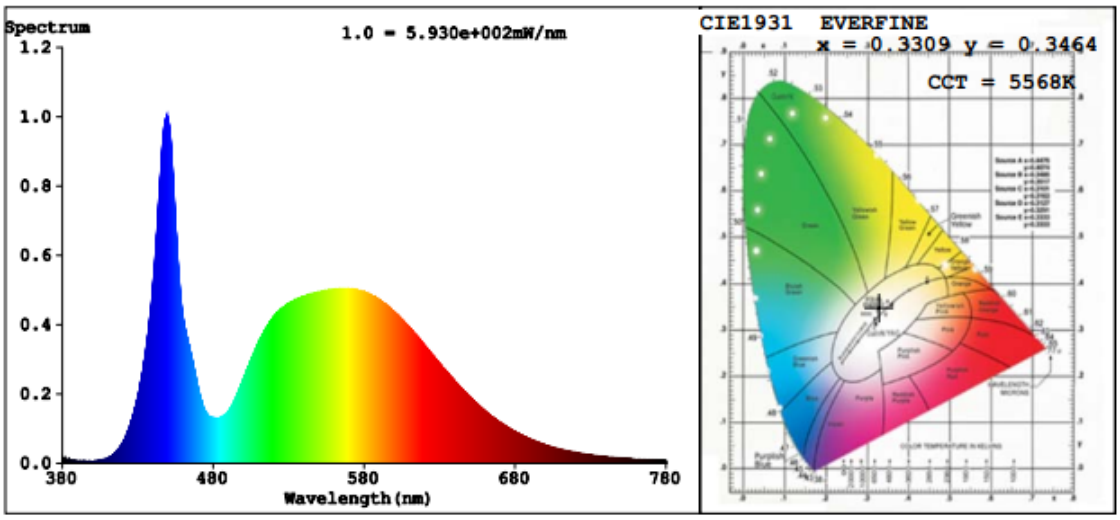
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	5568
Duv	0.0034
Chromaticity (x, y)	x=0.3309 y=0.3464
Chromaticity (u', v')	u'=0.2038 v'=0.4800
Color Rendering Index (CRI)	75.9
R9	0

Special Color Rendering Indices			
R1	74	R9	0
R2	80	R10	51
R3	83	R11	75
R4	77	R12	49
R5	75	R13	74
R6	72	R14	91
R7	83	R15	69
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)	33243	32843	>=10000(-10%)	
Luminous Efficacy (lm/W)	162.48	164.79	Standard: >=	Premium: >=
Most Worst Luminous/Highest Watts	160.52		100(-3%)	120(-3%)

Spectral Power Distribution & Chromaticity Diagram



2.3 Performance Assessment:

Model name	CCT(K)	Total Luminous (lm)	Power (W)	Luminous Efficacy (lm/W)
AOK-200WoT-NV-L5-00-3070-T402-P	3000K	32092	206.4	155.48
AOK-200WoT-NV-L5-00-3570-T402-P	3500K	32322*1	205.5*2	157.28*3
AOK-200WoT-NV-L5-00-4070-T402-P	4000K	32552*1	205.5*2	158.40*3
AOK-200WoT-NV-L5-00-4570-T402-P	4500K	32782*1	205.5*2	159.52*3
AOK-200WoT-NV-L5-00-5070-T402-P	5000K	33012*1	205.5*2	160.64*3
AOK-200WoT-NV-L5-00-5770-T402-P	5700K	33243	204.6	162.48

*1: This value is calculated and the calculation formula is as below:
32322=(33243-32092)/5+32092
32552=(33243-32092)/5+32322
32782=(33243-32092)/5+32552
33012=(33243-32092)/5+32782

*2: This value is calculated and the calculation formula is as below:
205.5=(206.4+204.6)/2

*3: This value is calculated and the calculation formula is as below:
157.28=32322/205.5
158.40=32552/205.5
159.52=32782/205.5
160.64=33012/205.5

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 ********