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-230WoT-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-230WoT-NV-L5-00-3070-T402-P
AOK-230WoT-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-230WoT-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	230W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,3500K,4000K,4500K,5000K,5700K	
LED Manufacturer	Lumileds	
LED Model	L150-3070502400000, L150-5770502400000	
Sample Number	GZE1711117-L1(3000K), L2(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 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AOK-230WoT-NV-L5-00-3070-T402-P		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE1711117-L1	120.0	60	1.9441	232.5	0.9966	7.25
	277.0	60	0.8705	224.1	0.9294	9.17
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

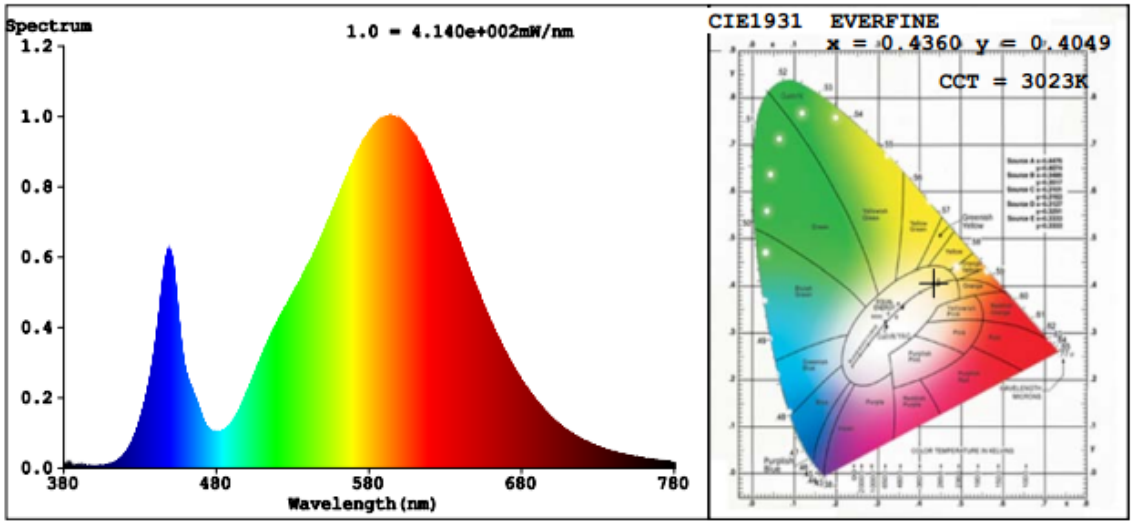
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3023
Duv	0.0005
Chromaticity (x, y)	x=0.4360 y=0.4049
Chromaticity (u', v')	u'=0.2496 v'=0.5216
Color Rendering Index (CRI)	72.6
R9	0

Special Color Rendering Indices			
R1	69	R9	0
R2	82	R10	58
R3	93	R11	63
R4	69	R12	49
R5	68	R13	71
R6	74	R14	96
R7	79	R15	63
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)	35182	34472	>=10000(-10%)	
Luminous Efficacy (lm/W)	151.32	153.82	Standard: >= 100(-3%)	Premium: >= 120(-3%)
Most Worst Luminous/Highest Watts	148.27			
Zonal lumens in the 0-90° zone (%)	100	--	>= 100(-1)	
Zonal lumens in the 80-90° zone (%)	2.0	--	<= 10(+3)	
Beam Angle (°)	98.0	--	--	
Center Beam Candle Power (cd)	8196	--	--	

Spectral Power Distribution & Chromaticity Diagram

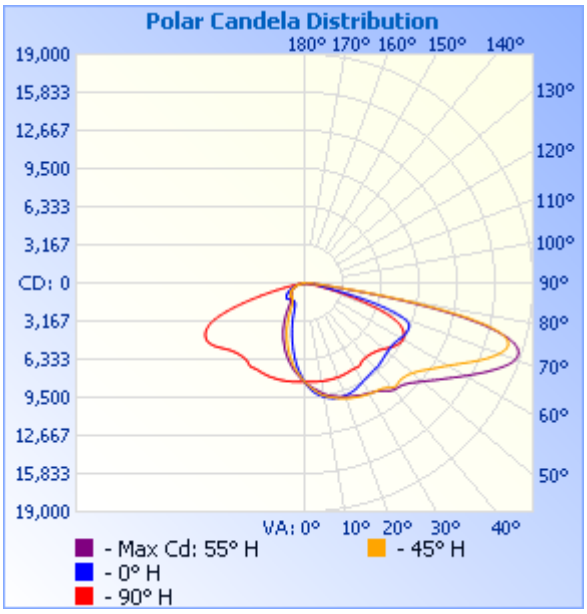


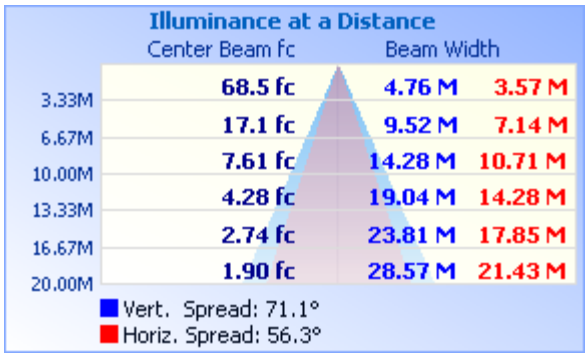
Zonal Lumen Tabulation

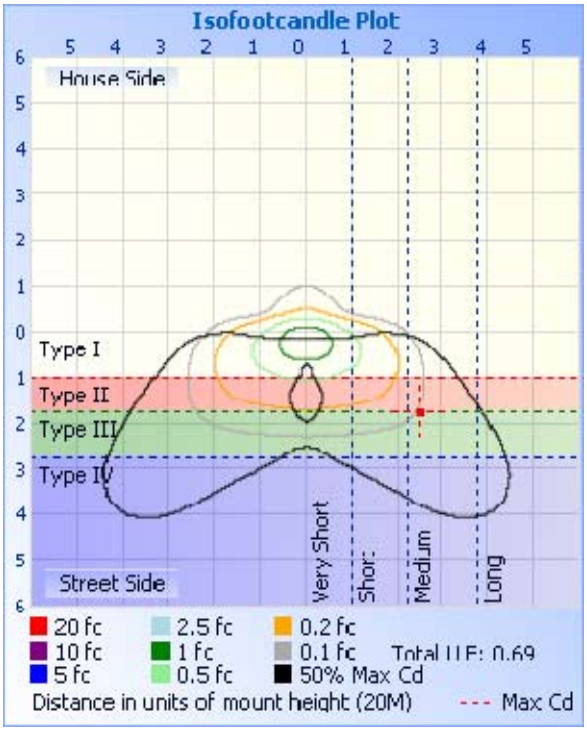
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	6,139.0	17.4%
0-40	10,281.5	29.2%
0-60	21,639.0	61.5%
60-90	13,542.3	38.5%
70-100	6,133.2	17.4%
90-120	0	0%
0-90	35,181.3	100%
90-180	0	0%
0-180	35,181.3	100%

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-10	770.6	2.2%	90-100	0	0%
10-20	2,155.6	6.1%	100-110	0	0%
20-30	3,212.7	9.1%	110-120	0	0%
30-40	4,142.6	11.8%	120-130	0	0%
40-50	5,105.6	14.5%	130-140	0	0%
50-60	6,251.9	17.8%	140-150	0	0%
60-70	7,409.0	21.1%	150-160	0	0%
70-80	5,442.0	15.5%	160-170	0	0%
80-90	691.2	2.0%	170-180	0	0%

Photometric Data







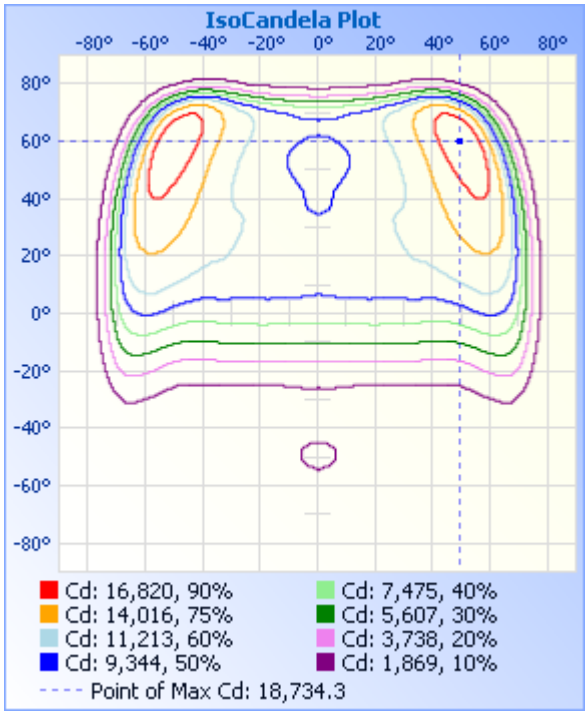


Table--1 UNIT: ×10cd

γ (DEG) \ C (DEG)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
0	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820
5	822	832	842	851	859	866	873	879	885	889	894	898	902	904	908	911	913	914	911
10	826	844	861	877	893	907	925	934	943	949	953	956	960	961	961	962	962	961	960
15	829	857	882	902	932	948	962	972	980	986	991	995	994	994	995	994	992	989	987
20	828	866	894	935	959	978	993	1004	1011	1018	1022	1020	1017	1016	1014	1008	1001	996	993
25	824	867	919	956	983	1006	1022	1031	1039	1043	1042	1037	1032	1025	1017	1005	993	985	979
30	821	880	936	978	1010	1033	1048	1058	1065	1063	1057	1046	1034	1020	1005	988	973	960	953
35	815	896	970	1024	1063	1083	1092	1092	1092	1082	1066	1045	1026	1006	988	969	954	938	934
40	800	900	984	1048	1099	1129	1148	1155	1155	1130	1099	1063	1032	1006	983	961	944	927	922
45	814	941	1046	1120	1171	1193	1198	1186	1164	1132	1105	1076	1045	1013	983	957	938	914	909
50	853	1010	1134	1224	1280	1303	1297	1271	1223	1164	1112	1066	1028	999	972	944	923	905	895
55	911	1094	1237	1339	1406	1431	1425	1391	1330	1249	1169	1102	1050	1007	973	941	920	899	893
60	942	1155	1326	1456	1540	1577	1575	1539	1470	1372	1267	1176	1102	1045	1001	964	942	925	918
65	899	1131	1339	1514	1637	1709	1733	1715	1652	1542	1404	1280	1183	1109	1051	1003	971	948	942
70	696	890	1104	1338	1563	1735	1830	1863	1828	1719	1556	1384	1239	1130	1047	979	933	903	897
75	302	393	508	692	974	1305	1581	1748	1790	1729	1562	1316	1063	868	721	611	538	497	486
80	66.7	97.4	133	172	237	367	598	825	931	917	781	563	359	240	189	169	150	148	146
85	20.1	26.1	31.0	42.4	61.7	81.9	98.6	114	125	132	133	117	108	101	92.5	85.8	80.9	77.7	76.6
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	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820
5	914	913	911	908	904	902	898	894	889	885	879	873	866	859	851	842	832	822	812
10	961	962	962	961	961	960	956	953	949	943	934	925	907	893	877	861	844	826	805
15	989	992	994	995	994	994	995	991	986	980	972	962	948	932	902	882	857	829	798
20	996	1001	1008	1014	1016	1017	1020	1022	1018	1011	1004	993	978	959	935	894	866	828	787
25	985	993	1005	1017	1025	1032	1037	1042	1043	1039	1031	1022	1006	983	956	919	867	824	771
30	960	973	988	1005	1020	1034	1046	1057	1063	1065	1058	1048	1033	1010	978	936	880	821	756
35	938	954	969	988	1006	1026	1045	1066	1082	1092	1092	1092	1083	1063	1024	970	896	815	735
40	927	944	961	983	1006	1032	1063	1099	1130	1155	1155	1148	1129	1099	1048	984	900	800	703
45	914	938	957	983	1013	1045	1076	1105	1132	1164	1186	1198	1193	1171	1120	1046	941	814	683
50	905	923	944	972	999	1028	1066	1112	1164	1223	1271	1297	1303	1280	1224	1134	1010	853	684
55	899	920	941	973	1007	1050	1102	1169	1249	1330	1391	1425	1431	1406	1339	1237	1094	911	702
60	925	942	964	1001	1045	1102	1176	1267	1372	1470	1539	1575	1577	1540	1456	1326	1155	942	706
65	948	971	1003	1051	1109	1183	1280	1404	1542	1652	1715	1733	1709	1637	1514	1339	1131	899	651
70	903	933	979	1047	1130	1239	1384	1556	1719	1828	1863	1830	1735	1563	1338	1104	890	696	491
75	497	538	611	721	868	1063	1316	1562	1729	1790	1748	1581	1305	974	692	508	393	302	196
80	148	150	169	189	240	359	563	781	917	931	825	598	367	237	172	133	97.4	66.7	46.8
85	77.7	80.9	85.8	92.5	101	108	117	133	132	125	114	98.6	81.9	61.7	42.4	31.0	26.1	20.1	15.8
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	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820
5	801	792	782	773	763	754	745	736	729	721	715	710	706	703	701	699	696	699	701
10	786	765	743	722	700	682	664	646	629	613	599	587	578	570	565	562	554	562	565
15	765	731	700	666	634	601	570	543	516	492	472	455	440	430	423	418	409	418	423
20	745	698	650	604	557	513	470	435	401	370	343	320	301	286	277	272	264	272	277
25	716	656	591	532	474	419	367	319	278	242	219	205	198	194	192	191	189	191	192
30	685	609	529	453	383	315	256	212	190	181	177	176	175	175	175	175	174	175	175
35	642	548	453	363	282	218	185	174	170	168	167	168	169	170	171	173	172	173	171
40	590	478	368	269	202	174	166	163	162	162	164	167	170	173	175	177	177	177	175
45	540	406	282	198	167	159	156	156	157	159	163	168	173	179	183	186	188	186	183
50	504	335	214	162	149	147	147	148	151	156	160	166	173	180	185	190	193	190	185
55	481	283	172	139	135	135	136	139	142	146	151	157	164	170	176	181	185	181	176
60	454	240	140	122	120	121	122	124	127	131	135	140	145	151	155	158	161	158	155
65	392	189	112	103	102	103	104	106	107	109	111	114	117	120	123	126	127	126	123
70	267	117	85.1	81.4	81.1	82.2	82.8	82.5	82.0	82.5	82.9	84.1	86.1	88.3	90.4	92.4	93.6	92.4	90.4
75	96.1	67.4	60.3	58.4	57.7	57.1	56.4	55.3	53.8	52.9	52.1	52.2	52.3	52.8	53.8	54.7	55.1	54.7	53.8
80	40.7	37.3	35.2	33.5	31.6	29.8	27.7	25.8	24.0	22.5	21.0	19.6	18.3	17.1	16.3	16.1	15.7	16.1	16.3
85	13.9	11.8	9.64	7.63	5.81	4.24	3.21	2.37	1.81	1.39	1.06	0.87	0.69	0.53	0.46	0.44	0.41	0.44	0.46
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	820	820	820	820	820	820	820	820	820	820	820	820	820	820	820		
5	703	706	710	715	721	729	736	745	754	763	773	782	792	801	812		
10	570	578	587	599	613	629	646	664	682	700	722	743	765	786	805		
15	430	440	455	472	492	516	543	570	601	634	666	700	731	765	798		
20	286	301	320	343	370	401	435	470	513	557	604	650	698	745	787		
25	194	198	205	219	242	278	319	367	419	474	532	591	656	716	771		
30	175	175	176	177	181	190	212	256	315	383	453	529	609	685	756		
35	170	169	168	167	168	170	174	185	218	282	363	453	548	642	735		
40	173	170	167	164	162	162	163	166	174	202	269	368	478	590	703		
45	179	173	168	163	159	157	156	156	159	167	198	282	406	540	683		
50	180	173	166	160	156	151	148	147	147	149	162	214	335	504	684		
55	170	164	157	151	146	142	139	136	135	135	139	172	283	481	702		
60	151	145	140	135	131	127	124	122	121	120	122	140	240	454	706		
65	120	117	114	111	109	107	106	104	103	102	103	112	189	392	651		
70	88.3	86.1	84.1	82.9	82.5	82.0	82.5	82.8	82.2	81.1	81.4	85.1	117	267	491		
75	52.8	52.3	52.2	52.1	52.9	53.8	55.3	56.4	57.1	57.7	58.4	60.3	67.4	96.1	196		
80	17.1	18.3	19.6	21.0	22.5	24.0	25.8	27.7	29.8	31.6	33.5	35.2	37.3	40.7	46.8		
85	0.53	0.69	0.87	1.06	1.39	1.81	2.37	3.21	4.24	5.81	7.63	9.64	11.8	13.9	15.8		
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-230WoT-NV-L5-00-5770-T402-P		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE1711117-L2	120.0	60	1.9273	230.9	0.9984	7.54
	277.0	60	0.8629	222.6	0.9313	9.73
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

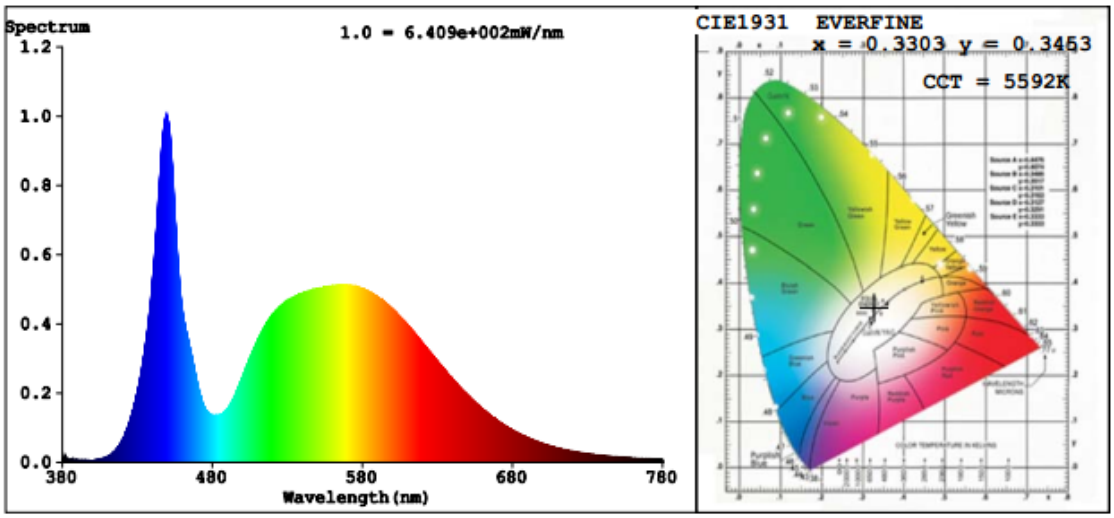
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	5592
Duv	0.0031
Chromaticity (x, y)	x=0.3303 y=0.3453
Chromaticity (u', v')	u'=0.2038 v'=0.4793
Color Rendering Index (CRI)	76.0
R9	0

Special Color Rendering Indices			
R1	74	R9	0
R2	80	R10	52
R3	83	R11	75
R4	77	R12	49
R5	75	R13	75
R6	73	R14	91
R7	84	R15	69
R8	63	--	--

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)	36408	35721	>=10000(-10%)	
Luminous Efficacy (lm/W)	157.68	160.47	Standard: >=	Premium: >=
Most Worst Luminous/Highest Watts	154.70		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-230WoT-NV-L5-00-3070-T402-P	3000K	35182	232.5	151.32
AOK-230WoT-NV-L5-00-3570-T402-P	3500K	35427*1	231.7*2	152.90*3
AOK-230WoT-NV-L5-00-4070-T402-P	4000K	35672*1	231.7*2	153.96*3
AOK-230WoT-NV-L5-00-4570-T402-P	4500K	35917*1	231.7*2	155.02*3
AOK-230WoT-NV-L5-00-5070-T402-P	5000K	36162*1	231.7*2	156.07*3
AOK-230WoT-NV-L5-00-5770-T402-P	5700K	36408	230.9	157.68

*1: This value is calculated and the calculation formula is as below:
35427=(36408-35182)/5+35182
35672=(36408-35182)/5+35427
35917=(36408-35182)/5+35672
36162=(36408-35182)/5+35917

*2: This value is calculated and the calculation formula is as below:
231.7=(232.5+230.9)/2

*3: This value is calculated and the calculation formula is as below:
152.90=35427/231.7
153.96=35672/231.7
155.02=35917/231.7
156.07=36162/231.7

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 ********