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-115WoT-NV-X5-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-115WoT-NV-X5-00-3070-T402-P
AOK-115WoT-NV-X5-00-5770-T402-P

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

Test & Report By:

Bill Luo

Engineer: Bill Luo

Date:Mar.23,2018

Review By:

Univ Xie

Manager: Univ Xie

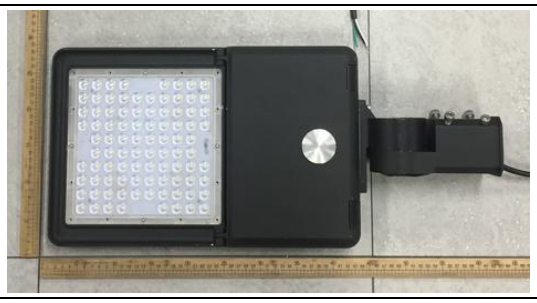
Note: 1.The results contained in this report pertain only to the tested samples.

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-115WoT-NV-X5-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	115W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,3500K,4000K,4500K,5000K,5700K	
LED Manufacturer	Lumileds	
LED Model	3000K :L150-3070502400000, 3500K :L150-3570502400000, 4000K :L150-4070502400000, 4500K :L150-4570502400000, 5000K :L150-5070502400000, 5700K :L150-5770502400000	
Sample Number	GZE1711117-D1(3000K), D2(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	Mar.22,2018
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 22.5° 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 25° C ± 1° 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° C ± 1° 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	2018-03-22	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AOK-115WoT-NV-X5-00-3070-T402-P		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE1711117-D1	120.0	60	0.9611	114.3	0.9911	5.57
	277.0	60	0.4578	112.1	0.8839	7.22
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

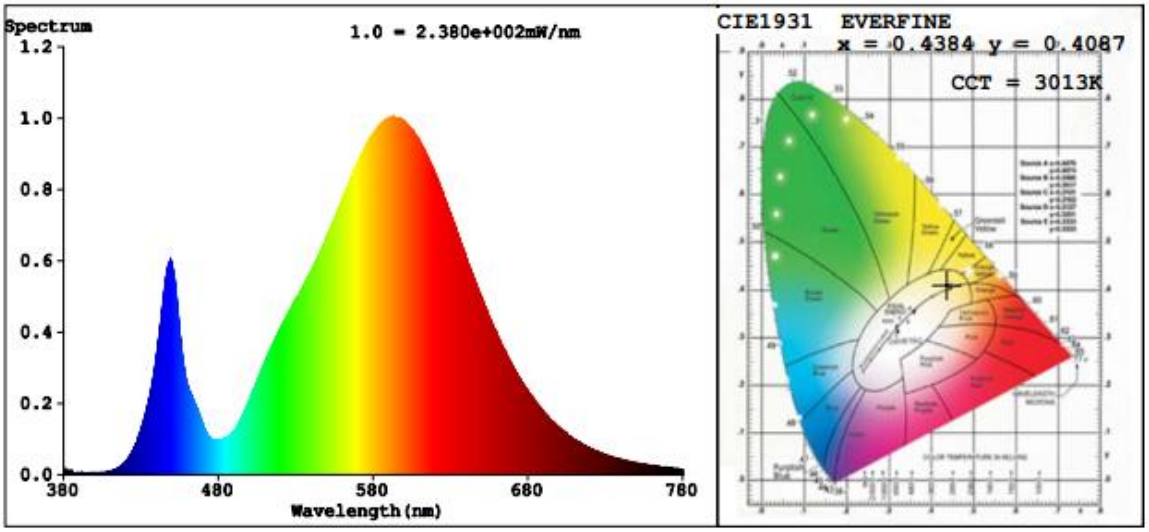
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	3013
Duv	0.0016
Chromaticity (x, y)	x=0.4384 y=0.4087
Chromaticity (u', v')	u'=0.2495 v'=0.5234
Color Rendering Index (CRI)	71.6
R9	0

Special Color Rendering Indices			
R1	68	R9	0
R2	81	R10	56
R3	93	R11	62
R4	68	R12	46
R5	66	R13	70
R6	73	R14	96
R7	79	R15	61
R8	46	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result		DLC V4.3 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	18375	18120	>=10000(-10%)	
Luminous Efficacy (lm/W)	160.76	161.64	Standard: >= 100(-3%)	Premium: >= 120(-3%)
Most Worst Luminous/Highest Watts	158.53			
Zonal lumens in the 0-90° zone (%)	100	--	>= 100(-1)	
Zonal lumens in the 80-90° zone (%)	1.3	--	<= 10(+3)	
Beam Angle (°)	111.2	--	--	
Center Beam Candle Power (cd)	4816	--	--	

Spectral Power Distribution & Chromaticity Diagram

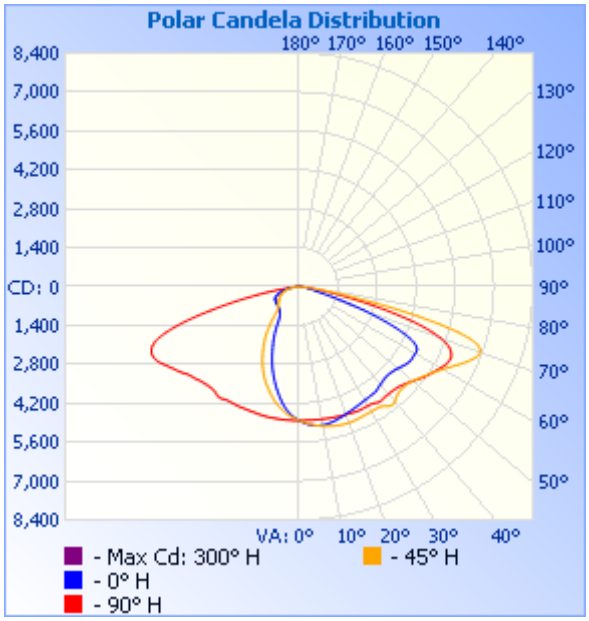


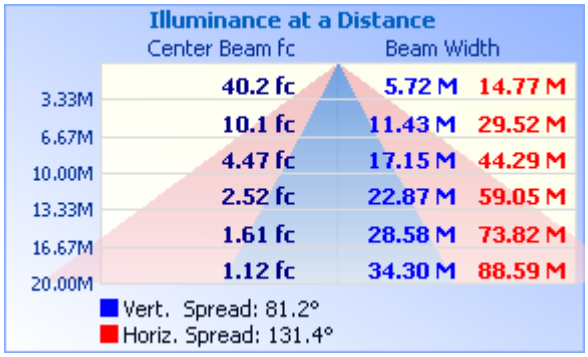
Zonal Lumen Tabulation

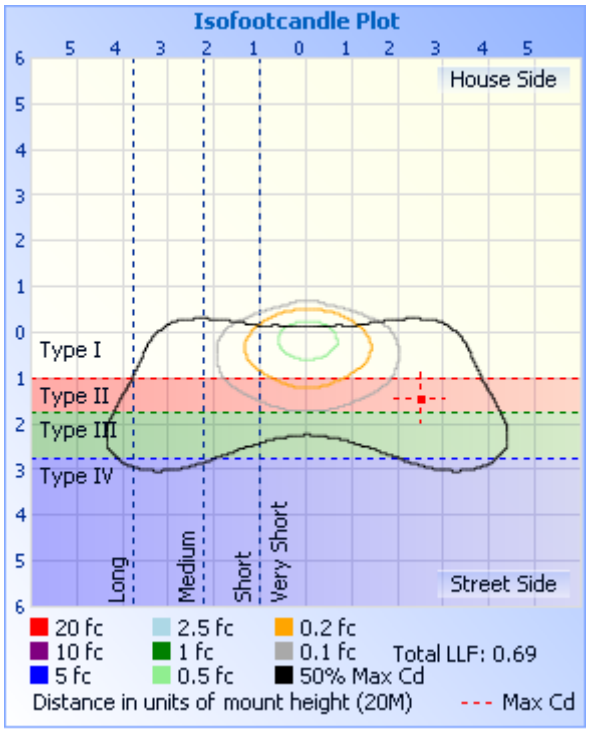
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	3,673.3	20%
0-40	6,066.9	33%
0-60	12,073.3	65.7%
60-90	6,295.7	34.3%
70-100	2,581.7	14.1%
90-120	0	0%
0-90	18,369.0	100%
90-180	0	0%
0-180	18,369.0	100%

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-10	455.1	2.5%	90-100	0	0%
10-20	1,288.1	7.0%	100-110	0	0%
20-30	1,930.1	10.5%	110-120	0	0%
30-40	2,393.6	13.0%	120-130	0	0%
40-50	2,756.0	15.0%	130-140	0	0%
50-60	3,250.3	17.7%	140-150	0	0%
60-70	3,714.0	20.2%	150-160	0	0%
70-80	2,346.1	12.8%	160-170	0	0%
80-90	235.6	1.3%	170-180	0	0%

Photometric Data







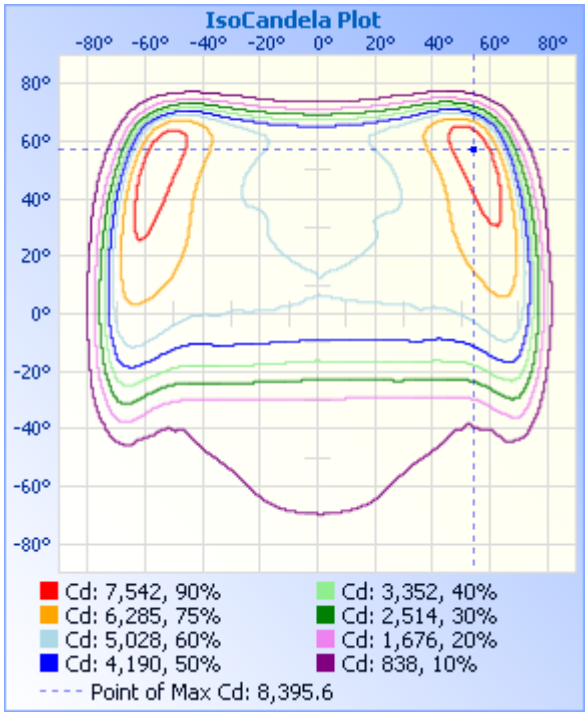


Table--1 UNIT: cd

γ (DEG) \ C (DEG)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
0	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816
5	4817	4835	4843	4871	4881	4909	4908	4937	4934	4963	4963	4973	4980	4985	4988	5003	4984	5003	4997
10	4816	4870	4897	4943	4953	5006	5006	5039	5037	5065	5067	5059	5072	5069	5071	5078	5066	5058	5054
15	4819	4903	4957	5014	5042	5083	5096	5110	5099	5133	5104	5095	5076	5061	5045	5042	5034	5000	4990
20	4804	4939	5005	5069	5104	5150	5171	5162	5145	5155	5105	5070	5033	4993	4970	4946	4932	4894	4882
25	4813	4961	5052	5118	5181	5228	5234	5212	5166	5125	5075	5008	4959	4923	4882	4858	4827	4796	4791
30	4825	4979	5092	5178	5236	5276	5268	5240	5149	5108	5040	4970	4908	4861	4823	4791	4764	4734	4720
35	4908	5122	5270	5374	5428	5447	5396	5357	5242	5161	5068	4998	4927	4874	4817	4767	4736	4699	4678
40	4824	5128	5308	5449	5517	5557	5505	5460	5336	5249	5141	5034	4929	4838	4762	4705	4661	4571	4564
45	4878	5252	5464	5594	5646	5617	5501	5385	5220	5108	4999	4908	4812	4738	4667	4632	4590	4512	4502
50	5028	5533	5800	5957	6004	5949	5774	5580	5355	5192	5048	4944	4833	4752	4686	4686	4664	4607	4597
55	5295	5886	6219	6438	6479	6448	6233	5940	5676	5463	5253	5107	4962	4873	4815	4822	4830	4787	4773
60	5603	6286	6728	6963	7035	7003	6787	6467	6120	5851	5617	5397	5216	5096	4989	4956	4909	4823	4814
65	5822	6623	7156	7481	7680	7721	7551	7267	6833	6452	6074	5720	5430	5199	4957	4749	4584	4439	4384
70	5346	6126	6733	7314	7842	8237	8316	8135	7652	7061	6266	5428	4670	4002	3435	3009	2720	2512	2447
75	3293	3696	4140	4889	5949	7007	7722	7776	6929	5615	4203	3026	2142	1578	1170	837	733	691	687
80	1161	1182	1280	1376	1582	2270	2464	2299	1896	1618	1047	562	481	437	414	394	386	366	356
85	167	163	173	218	254	254	235	209	173	155	155	156	150	136	121	110	99.7	92.0	89.9
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

Table--2 UNIT: cd

γ (DEG) \ C (DEG)	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185
0	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816
5	5002	4993	4995	4998	4996	4987	4986	4976	4979	4970	4958	4945	4946	4924	4898	4895	4882	4819	4833
10	5080	5078	5084	5080	5091	5084	5093	5085	5095	5092	5074	5080	5058	5030	4980	4973	4938	4837	4846
15	5032	5035	5054	5062	5086	5102	5138	5124	5177	5180	5177	5181	5168	5120	5088	5037	5011	4863	4869
20	4930	4936	4964	4989	5032	5063	5108	5129	5214	5243	5254	5265	5243	5205	5173	5125	5060	4897	4856
25	4838	4833	4876	4923	4960	4996	5069	5119	5202	5261	5301	5335	5327	5301	5240	5192	5093	4944	4848
30	4752	4776	4822	4857	4897	4963	5047	5101	5187	5275	5331	5380	5413	5385	5324	5254	5116	4944	4835
35	4719	4750	4800	4836	4902	4985	5088	5154	5253	5375	5460	5551	5627	5626	5564	5482	5307	5056	4886
40	4626	4659	4732	4798	4893	4993	5147	5253	5370	5487	5566	5639	5722	5707	5620	5520	5318	5023	4755
45	4565	4578	4641	4699	4775	4849	4985	5066	5208	5354	5495	5661	5780	5836	5822	5681	5439	5085	4737
50	4651	4651	4693	4729	4793	4879	5017	5134	5294	5490	5685	5939	6139	6233	6174	6062	5804	5303	4811
55	4813	4808	4836	4863	4926	5036	5165	5327	5559	5800	6087	6390	6617	6730	6698	6533	6169	5593	4974
60	4864	4884	4942	5014	5134	5267	5445	5670	5950	6275	6615	6927	7148	7229	7196	7005	6569	5861	5129
65	4451	4537	4714	4916	5165	5394	5712	6070	6504	6948	7358	7676	7840	7822	7664	7360	6806	6026	5113
70	2507	2649	2926	3329	3873	4542	5293	6091	6920	7585	8068	8315	8262	7916	7342	6737	6118	5417	4501
75	689	721	815	1118	1486	1982	2794	3893	5251	6561	7368	7484	6857	5814	4715	3905	3422	3169	2663
80	367	382	391	412	437	479	557	790	1451	1691	2064	2287	2092	1679	1264	1164	1000	988	812
85	94.0	99.9	111	123	141	155	161	162	161	174	205	231	249	256	222	177	164	154	144
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: cd

γ (DEG) \ C (DEG)	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280
0	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816
5	4787	4780	4747	4731	4699	4683	4666	4632	4605	4606	4568	4560	4542	4535	4539	4520	4514	4524	4526
10	4778	4724	4679	4643	4556	4506	4449	4386	4321	4275	4215	4171	4121	4097	4083	4049	4030	4060	4060
15	4765	4672	4588	4507	4374	4250	4141	4041	3927	3829	3743	3670	3599	3562	3534	3467	3453	3493	3505
20	4732	4598	4460	4321	4128	3940	3783	3648	3498	3347	3221	3112	3034	2968	2916	2852	2844	2876	2890
25	4691	4513	4293	4082	3848	3629	3397	3203	3001	2812	2644	2511	2415	2333	2273	2221	2204	2228	2255
30	4608	4381	4100	3822	3530	3232	2943	2689	2445	2233	2048	1905	1787	1695	1636	1584	1565	1586	1612
35	4580	4258	3906	3549	3143	2776	2428	2118	1830	1581	1387	1284	1242	1225	1219	1203	1199	1210	1212
40	4377	3980	3563	3095	2643	2207	1812	1457	1203	1131	1111	1107	1107	1111	1116	1109	1109	1117	1113
45	4230	3710	3152	2607	2072	1587	1193	1056	1041	1037	1037	1039	1042	1048	1054	1049	1050	1058	1052
50	4148	3438	2729	2058	1469	1061	974	969	967	965	965	973	987	1005	1019	1018	1021	1027	1017
55	4133	3169	2224	1479	991	896	893	895	892	896	909	926	948	971	992	999	1003	1007	991
60	4074	2835	1723	983	805	808	810	813	821	835	855	883	912	944	973	982	990	992	971
65	3849	2437	1227	704	699	706	710	724	741	764	790	823	858	894	924	937	942	940	922
70	3224	1841	765	579	583	589	602	620	638	662	687	714	744	773	799	811	815	815	796
75	1822	880	471	458	459	468	479	489	501	519	537	563	587	613	634	645	649	650	635
80	390	318	301	303	305	312	320	326	331	338	349	363	376	389	398	400	400	401	395
85	145	137	137	135	134	134	135	136	138	139	139	136	133	132	132	130	130	129	129
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: cd

γ (DEG) \ C (DEG)	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355		
0	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816	4816		
5	4533	4534	4545	4557	4586	4590	4617	4629	4649	4682	4702	4724	4751	4786	4778		
10	4091	4103	4148	4177	4236	4277	4343	4400	4443	4514	4577	4633	4689	4764	4768		
15	3540	3576	3637	3695	3772	3847	3981	4076	4182	4286	4398	4515	4613	4715	4760		
20	2941	3004	3085	3179	3297	3405	3580	3722	3857	4015	4187	4362	4511	4637	4758		
25	2312	2380	2481	2598	2755	2908	3104	3307	3521	3717	3947	4167	4378	4574	4731		
30	1673	1756	1862	2000	2178	2355	2584	2840	3107	3391	3676	3948	4225	4481	4701		
35	1224	1237	1270	1354	1532	1760	2031	2323	2650	3000	3355	3745	4094	4442	4746		
40	1114	1111	1111	1114	1131	1180	1396	1731	2095	2497	2921	3364	3798	4209	4568		
45	1050	1045	1042	1039	1040	1042	1057	1151	1495	1938	2433	2968	3529	4051	4516		
50	1007	992	978	968	968	967	972	980	1027	1363	1888	2525	3215	3937	4551		
55	976	954	931	912	900	891	896	899	899	952	1336	1999	2856	3810	4690		
60	948	918	887	857	838	821	815	814	811	811	902	1484	2515	3748	4867		
65	896	861	826	793	767	743	727	715	708	706	707	1017	2127	3596	4910		
70	776	747	717	688	665	639	622	607	592	588	590	662	1561	3025	4382		
75	618	591	567	542	521	503	492	482	471	463	464	477	738	1712	2651		
80	388	376	364	350	340	330	326	321	315	306	304	303	318	370	716		
85	130	132	132	135	136	135	134	131	131	131	131	133	135	142	144		
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	2018-03-22	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AOK-115WoT-NV-X5-00-5770-T402-P		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE1711117-D2	120.0	60	0.9515	113.3	0.9923	5.33
	277.0	60	0.4560	111.8	0.8851	7.71
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

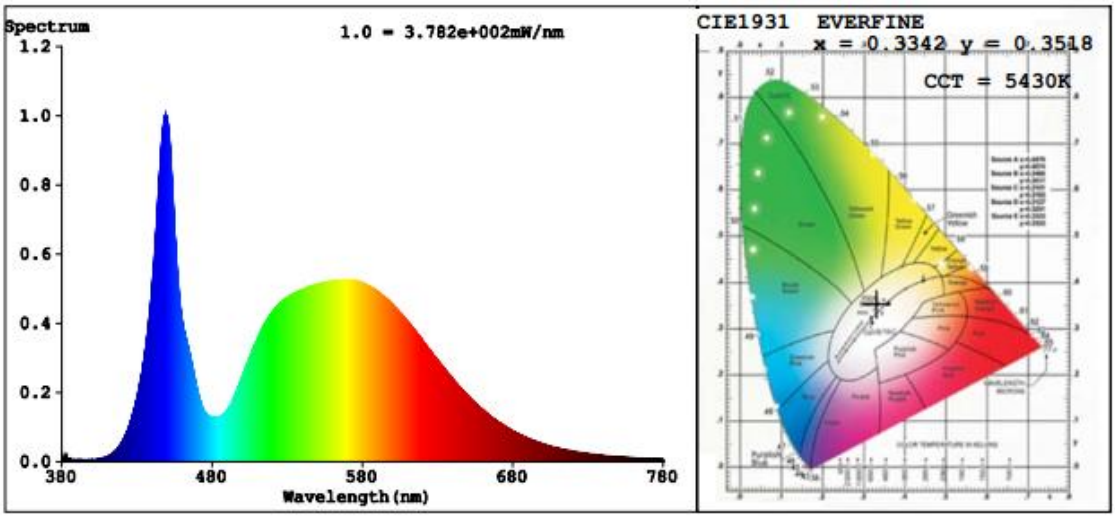
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	5430
Duv	0.0047
Chromaticity (x, y)	x=0.3342 y=0.3518
Chromaticity (u', v')	u'=0.2040 v'=0.4832
Color Rendering Index (CRI)	74.6
R9	0

Special Color Rendering Indices			
R1	72	R9	0
R2	79	R10	49
R3	84	R11	73
R4	75	R12	47
R5	73	R13	73
R6	71	R14	91
R7	83	R15	66
R8	60	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V4.3 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	18767	18602	>=10000(-10%)	
Luminous Efficacy (lm/W)	165.64	166.39	Standard: >= 100(-3%)	Premium: >= 120(-3%)
Most Worst Luminous/Highest Watts	164.18			

Spectral Power Distribution & Chromaticity Diagram



2.3 Performance Assessment:

Model name	CCT(K)	Total Luminous (lm)	Power (W)	Luminous Efficacy (lm/W)
AOK-115WoT-NV-X5-00-3070-T402-P	3000K	18375	114.3	160.76
AOK-115WoT-NV-X5-00-3570-T402-P	3500K	18453*1	113.8*2	162.15*3
AOK-115WoT-NV-X5-00-4070-T402-P	4000K	18532*1	113.8*2	162.85*3
AOK-115WoT-NV-X5-00-4570-T402-P	4500K	18610*1	113.8*2	163.53*3
AOK-115WoT-NV-X5-00-5070-T402-P	5000K	18689*1	113.8*2	164.23*3
AOK-115WoT-NV-X5-00-5770-T402-P	5700K	18767	113.3	165.64

*1: This value is calculated and the calculation formula is as below:
18453=(18767-18375)/5*1+18375
18532=(18767-18375)/5*2+18375
18610=(18767-18375)/5*3+18375
18689=(18767-18375)/5*4+18375

*2: This value is calculated and the calculation formula is as below:
113.8=(114.3+113.3)/2

*3: This value is calculated and the calculation formula is as below:
162.15=18453/113.8
162.85=18532/113.8
163.53=18610/113.8
164.23=18689/113.8

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 ******