



Report No.: GZE160710-C

NVLAP LAB CODE 201011-0

LM-79-08 Test Report

For

AOK LED Light Company Limited (Brand Name:AOK)

Building 1, St George's Science and Technology Industrial Park, Shajin Street,
Shenzhen, Guangdong Province, China Zip 518104

High-bay Luminaires for Commercial and Industrial Buildings

Model name(s): AOK-200WiU-X

Representative (Tested) Model: AOK-200WiU-X (3000K)
AOK-200WiU-X (5700K)

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

Test & Report By:

Jamie Lin

Engineer: Jamie Lin

Date: Jul.26,2016

Review By:

Tommy Liang

Manager: Tommy Liang

Note: 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

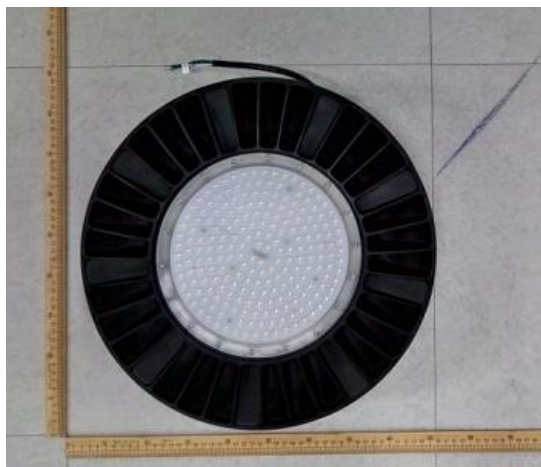
Report Format Number STD/QR4909-A/2

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	AOK LED Light Company Limited	
Brand Name	AOK	
Model Number	AOK-200WiU-X	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	High-bay Luminaires for Commercial and Industrial Buildings	
Rated Voltage / Frequency	100-277Vac,50/ 60 Hz	
Nominal Power	200W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,3500K,4000K,4500K,5000K,5700K	
LED Manufacturer	Nichia Corporation	
LED Model	NF2L757DR	
Sample Number	GZE160710-C1(3000K), C2(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	Jul.19,2016
Date of Test	Jul.21,2016
Test item	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, 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° 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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)

Test date	2016-07-21	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AOK-200WiU-X(3000K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160710-	120.0	60	1.659	198.6	0.9976	7.43
C1	277.0	60	0.7492	193.3	0.9315	12.51
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

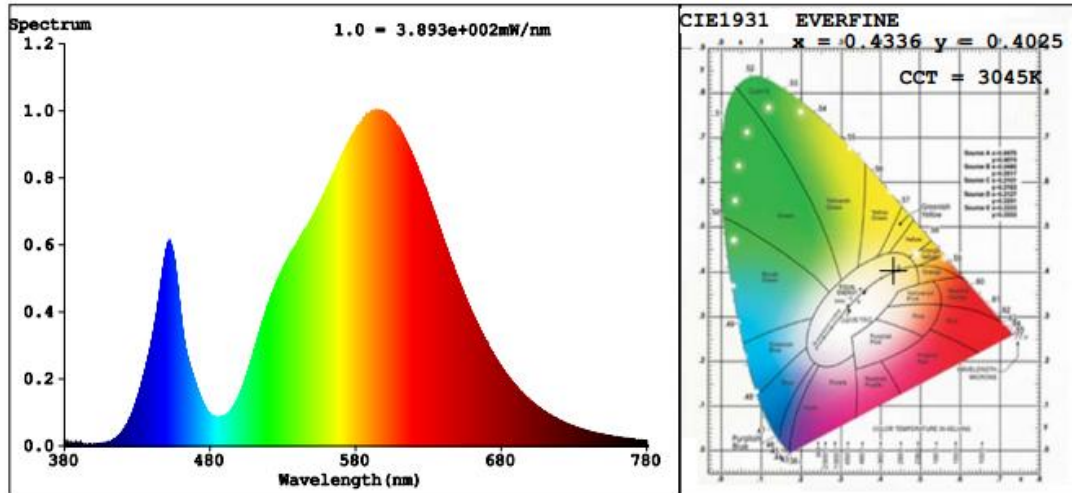
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	69	R9	0
Frequency (Hz)	60	R2	81	R10	55
CCT (K)	3045	R3	91	R11	62
Duv	-0.0002	R4	68	R12	44
Chromaticity (x, y)	x=0.4336 y=0.4025	R5	67	R13	71
Chromaticity (u', v')	u'=0.2491 v'=0.5203	R6	73	R14	94
Color Rendering Index (CRI)	72.1	R7	80	R15	63
R9	0	R8	48	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result		DLC V4.0 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	26470	25874	>=10000(-10%)	
Luminous Efficacy (lm/W)	133.28	133.85	Standard: >= 105(-3%)	Premium: >= 130(-3%)
Zonal lumens in the 20-50° zone (%)	58.6	--	>= 30(-10)	
Beam Angle (°)	120.4	--	--	
Center Beam Candle Power (cd)	7576	--	--	

Spectral Power Distribution & Chromaticity Diagram

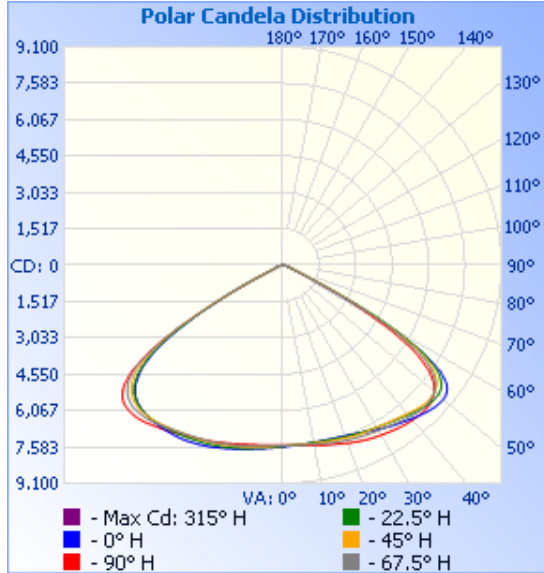


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	6,619.1	25%
0-40	11,844.0	44.7%
0-60	24,755.7	93.5%
60-90	1,691.5	6.4%
70-100	252.9	1%
90-120	5.7	0%
0-90	26,447.2	99.9%
90-180	20.4	0.1%
0-180	26,467.5	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	721.1	2.7%	90-100	1.5	0%
10-20	2,189.2	8.3%	100-110	1.6	0%
20-30	3,708.7	14.0%	110-120	2.6	0%
30-40	5,224.9	19.7%	120-130	3.3	0%
40-50	6,591.6	24.9%	130-140	3.6	0%
50-60	6,320.1	23.9%	140-150	3.2	0%
60-70	1,440.0	5.4%	150-160	2.4	0%
70-80	213.3	0.8%	160-170	1.5	0%
80-90	38.1	0.1%	170-180	0.6	0%

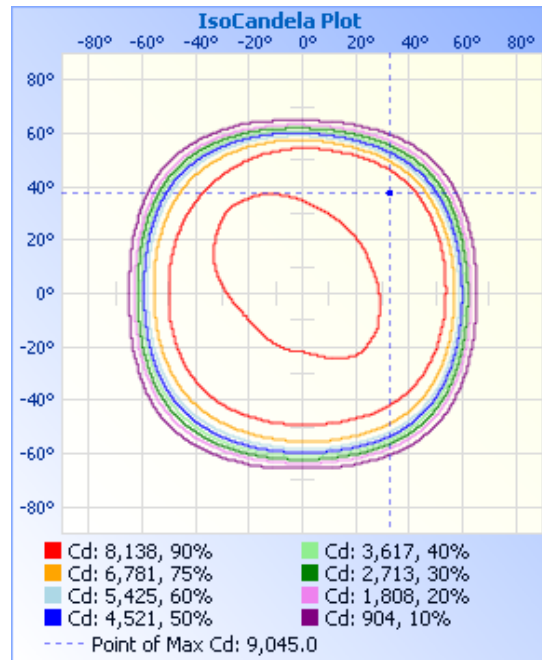
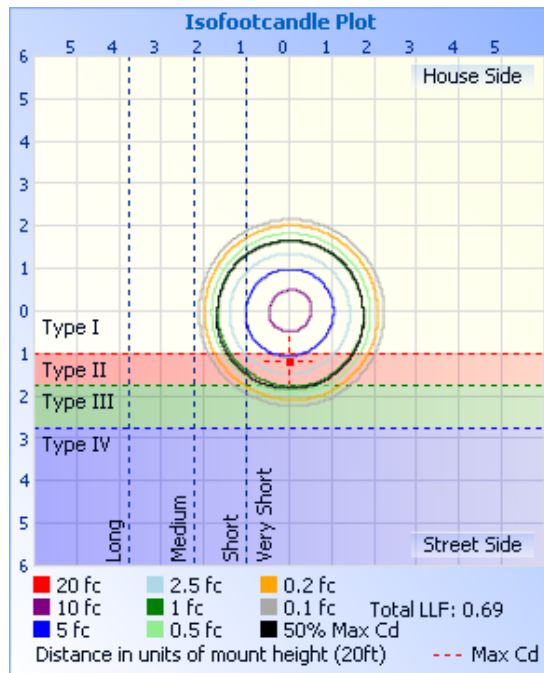
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	26.2 fc	45.5 ft	42.0 ft
34.0ft	6.6 fc	91.1 ft	84.1 ft
51.0ft	2.9 fc	136.6 ft	126.1 ft
68.0ft	1.6 fc	182.1 ft	168.2 ft
85.0ft	1.0 fc	227.7 ft	210.2 ft
102.0ft	0.7 fc	273.2 ft	252.2 ft

■ Vert. Spread: 106.5°
■ Horiz. Spread: 102.1°



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>

Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	7576	7554	7530	7523	7510	7486	7467	7443	7576	7554	7530	7523	7510	7486	7467	7443	7576
1	7562	7542	7520	7517	7509	7490	7477	7455	7591	7570	7539	7528	7512	7482	7458	7432	7562
2	7551	7532	7513	7514	7512	7498	7489	7473	7607	7586	7554	7537	7515	7480	7452	7423	7551
3	7543	7522	7512	7516	7518	7510	7502	7488	7624	7604	7568	7549	7520	7479	7445	7412	7543
4	7535	7513	7508	7519	7526	7521	7515	7508	7643	7626	7586	7560	7525	7481	7441	7405	7535
5	7524	7509	7508	7524	7535	7537	7535	7526	7660	7642	7602	7575	7534	7485	7435	7399	7524
6	7518	7503	7508	7533	7550	7552	7552	7544	7683	7665	7625	7588	7546	7488	7432	7393	7518
7	7511	7500	7512	7541	7566	7576	7573	7570	7703	7683	7638	7604	7558	7495	7429	7387	7511
8	7506	7500	7517	7552	7586	7598	7603	7593	7729	7707	7661	7619	7570	7504	7430	7383	7506
9	7501	7499	7525	7566	7607	7629	7632	7626	7750	7728	7678	7638	7582	7514	7433	7381	7501
10	7497	7500	7535	7582	7628	7655	7672	7662	7778	7756	7700	7655	7599	7532	7438	7380	7497
11	7495	7504	7545	7598	7656	7682	7705	7695	7804	7779	7718	7671	7616	7548	7448	7382	7495
12	7497	7510	7555	7616	7677	7721	7738	7729	7836	7809	7740	7693	7638	7571	7459	7387	7497
13	7501	7515	7568	7633	7706	7753	7781	7774	7863	7833	7761	7712	7658	7592	7476	7395	7501
14	7505	7524	7578	7649	7720	7795	7816	7809	7897	7858	7782	7738	7680	7615	7492	7416	7505
15	7512	7532	7587	7670	7752	7831	7860	7844	7925	7889	7810	7762	7712	7643	7516	7427	7512
16	7518	7542	7603	7686	7774	7867	7898	7881	7953	7913	7832	7790	7737	7669	7539	7443	7518
17	7530	7553	7614	7704	7800	7915	7946	7934	7991	7943	7860	7813	7770	7703	7570	7466	7530
18	7540	7569	7631	7726	7827	7953	7986	7976	8021	7967	7881	7836	7797	7731	7597	7487	7540
19	7553	7583	7651	7748	7854	8000	8027	8027	8059	7989	7906	7864	7825	7770	7637	7519	7553
20	7571	7604	7667	7764	7900	8038	8082	8070	8089	8016	7926	7886	7861	7803	7674	7547	7571
21	7592	7620	7686	7783	7928	8087	8134	8124	8128	8036	7950	7913	7889	7840	7715	7587	7592
22	7620	7637	7708	7800	7954	8121	8178	8168	8157	8062	7968	7935	7924	7887	7768	7623	7620
23	7645	7657	7721	7821	7990	8161	8234	8218	8191	8082	7990	7955	7952	7928	7814	7664	7645
24	7675	7676	7734	7839	8019	8193	8276	8253	8217	8105	8006	7979	7988	7977	7876	7720	7675
25	7704	7701	7745	7856	8053	8232	8325	8298	8249	8124	8024	7999	8018	8021	7927	7769	7704
26	7736	7722	7761	7877	8078	8263	8358	8331	8274	8141	8045	8024	8048	8064	7992	7833	7736
27	7781	7740	7772	7893	8105	8297	8389	8367	8299	8165	8065	8046	8086	8119	8048	7888	7781
28	7818	7765	7781	7914	8128	8321	8423	8393	8329	8186	8088	8078	8117	8163	8103	7944	7818

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>

29	7866	7784	7797	7934	8152	8344	8444	8417	8351	8211	8107	8103	8160	8219	8173	8014	7866
30	7902	7808	7809	7953	8183	8370	8469	8444	8373	8231	8134	8129	8196	8264	8229	8073	7902
31	7952	7836	7831	7976	8207	8388	8484	8461	8387	8253	8157	8163	8231	8322	8298	8141	7952
32	7992	7863	7852	7995	8237	8407	8495	8479	8403	8277	8182	8194	8277	8368	8351	8197	7992
33	8042	7893	7872	8024	8260	8424	8505	8491	8416	8297	8214	8231	8319	8413	8416	8269	8042
34	8082	7919	7899	8056	8283	8436	8512	8500	8428	8318	8239	8260	8369	8467	8464	8321	8082
35	8130	7954	7920	8081	8318	8447	8515	8505	8436	8338	8273	8292	8410	8508	8512	8375	8130
36	8167	7981	7943	8115	8339	8458	8512	8510	8442	8359	8298	8335	8459	8562	8570	8435	8167
37	8207	8011	7979	8142	8357	8464	8513	8508	8452	8377	8333	8368	8504	8608	8615	8483	8207
38	8259	8050	8008	8177	8383	8476	8517	8505	8460	8392	8361	8412	8548	8654	8670	8543	8259
39	8305	8086	8044	8205	8401	8485	8516	8505	8463	8411	8389	8447	8602	8707	8713	8587	8305
40	8359	8133	8072	8235	8419	8492	8517	8506	8463	8423	8417	8493	8646	8751	8766	8645	8359
41	8401	8172	8107	8271	8433	8496	8516	8501	8458	8430	8435	8526	8697	8800	8804	8687	8401
42	8455	8211	8151	8297	8444	8503	8515	8499	8453	8435	8456	8559	8734	8837	8841	8736	8455
43	8499	8263	8185	8322	8453	8506	8506	8486	8440	8431	8467	8581	8777	8883	8891	8773	8499
44	8542	8298	8221	8337	8455	8504	8494	8471	8417	8420	8472	8595	8800	8917	8931	8810	8542
45	8590	8347	8247	8346	8450	8492	8477	8439	8394	8396	8468	8601	8817	8952	8975	8856	8590
46	8629	8382	8270	8345	8437	8475	8443	8401	8353	8367	8443	8599	8824	8975	9003	8891	8629
47	8666	8410	8279	8337	8413	8435	8399	8346	8309	8328	8414	8583	8823	8991	9029	8924	8666
48	8688	8429	8278	8314	8362	8383	8315	8247	8234	8260	8376	8558	8807	8991	9045	8941	8688
49	8706	8435	8265	8287	8306	8314	8222	8151	8152	8190	8310	8504	8774	8972	9041	8941	8706
50	8714	8428	8241	8241	8209	8189	8106	8000	8025	8079	8239	8441	8701	8913	9014	8921	8714
51	8703	8411	8191	8154	8109	8059	7917	7843	7892	7962	8116	8333	8610	8829	8939	8875	8703
52	8650	8355	8130	8061	7979	7851	7730	7657	7681	7774	7988	8213	8451	8674	8835	8774	8650
53	8564	8277	8037	7909	7763	7636	7438	7371	7471	7580	7778	8055	8276	8492	8686	8648	8564
54	8431	8126	7867	7737	7541	7371	7152	7096	7218	7272	7558	7792	7978	8178	8403	8400	8431
55	8186	7946	7677	7521	7194	6966	6818	6689	6832	6963	7205	7512	7662	7839	8076	8106	8186
56	7898	7706	7361	7181	6847	6576	6319	6287	6462	6588	6846	7046	7140	7274	7521	7604	7898
57	7396	7299	7026	6820	6425	6121	5849	5822	5904	6021	6402	6558	6602	6704	6953	7082	7396
58	6852	6862	6591	6235	5774	5452	5177	5187	5381	5485	5735	5836	5974	6033	6106	6279	6852
59	5979	6132	5888	5677	5175	4848	4606	4635	4648	4709	5107	5155	5063	5083	5325	5540	5979

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>

60	5165	5397	5211	5030	4357	4050	3845	3890	4015	4024	4206	4109	4194	4201	4180	4382	5165
61	4237	4579	4232	4110	3654	3386	3216	3261	3166	3116	3403	3239	3078	3082	3255	3410	4237
62	3013	3451	3366	3301	2935	2640	2494	2517	2590	2524	2531	2346	2423	2452	2422	2724	3013
63	2121	2488	2451	2213	2016	1915	1804	1830	1836	1759	1865	1699	1635	1685	1812	1916	2121
64	1412	1676	1633	1616	1386	1441	1261	1364	1348	1283	1235	1106	1174	1221	1204	1257	1412
65	1000	1203	1073	1063	999	981	928	922	904	860	881	783	766	806	866	877	1000
66	672	808	773	760	679	726	639	674	661	638	604	545	569	563	609	613	672
67	532	614	552	527	524	520	490	473	478	472	453	450	451	471	501	508	532
68	439	485	461	432	417	408	383	368	396	386	391	386	394	409	429	433	439
69	393	424	394	370	370	358	334	322	336	344	344	346	363	375	390	394	393
70	349	371	356	338	329	316	293	285	295	304	316	320	329	337	349	353	349
71	311	328	317	305	301	287	266	262	269	278	287	291	304	309	313	317	311
72	283	298	290	282	271	257	239	236	240	249	265	269	275	278	287	291	283
73	253	265	260	255	249	235	219	218	219	222	239	243	248	249	256	261	253
74	230	242	239	230	222	209	196	197	195	202	214	222	226	226	231	237	230
75	203	214	212	210	198	190	175	176	173	180	196	198	201	200	204	210	203
76	183	193	188	187	180	169	159	161	157	163	174	175	183	181	180	184	183
77	159	169	169	169	159	149	141	143	137	142	153	157	160	158	161	165	159
78	137	147	148	146	142	133	127	129	122	122	136	134	137	136	138	143	137
79	118	129	130	129	122	114	109	112	104	108	116	116	121	118	120	125	118
80	97	107	110	107	104	100	96	98	88	90	101	96	101	98	100	104	97
81	82	91	90	87	89	83	80	83	76	77	82	78	86	83	81	85	82
82	65	73	75	73	73	68	65	67	61	62	66	64	68	65	67	70	65
83	49	59	59	57	60	56	54	56	50	47	54	49	51	48	51	54	49
84	38	43	46	45	45	42	40	42	38	37	39	35	39	36	39	41	38
85	24	29	32	31	31	31	30	32	25	24	26	24	24	22	25	27	24
86	15	19	18	21	20	18	18	19	16	14	12	11	13	13	13	14	15
87	5	8	9	9	8	8	7	8	6	5	4	5	5	5	6	6	5
88	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2
89	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	2
90	1	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	1

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>

91	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	1
92	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	1
93	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	1
94	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	1
95	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	1
96	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	1
97	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	1
98	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1
99	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1
100	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1
101	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
102	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1
103	1	1	1	1	1	1	1	2	2	2	2	2	1	2	1	1	1
104	1	1	1	1	1	1	1	2	2	2	2	2	1	2	2	2	1
105	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	1
106	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	1
107	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	1
108	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1
109	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
110	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
111	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
112	2	2	2	2	2	2	2	3	2	3	2	2	2	2	2	2	2
113	2	2	2	2	2	2	2	3	3	3	3	3	2	2	2	2	2
114	2	2	2	2	2	2	3	3	3	3	3	3	3	2	3	2	2
115	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2
116	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
117	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
118	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
119	3	3	3	3	3	3	3	4	3	3	3	3	3	3	3	3	3
120	3	3	3	3	3	3	3	4	3	3	3	3	3	3	3	3	3
121	3	3	3	3	3	3	3	4	3	3	3	3	3	3	3	3	3

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>

122	3	3	3	3	3	3	3	3	3	4	3	3	3	3	3	3	3
123	4	3	3	3	4	4	4	3	4	4	4	3	4	3	3	3	4
124	4	3	3	3	4	4	4	3	4	4	4	4	4	3	4	4	4
125	4	4	4	3	4	4	4	4	4	4	4	4	4	3	4	4	4
126	4	4	4	3	4	4	4	4	4	4	4	4	4	3	4	4	4
127	4	4	4	4	4	4	4	4	5	4	4	4	4	4	4	4	4
128	4	4	4	4	4	4	4	4	5	4	4	4	4	4	4	4	4
129	4	4	4	4	4	4	4	4	5	4	4	4	4	4	4	4	4
130	5	4	4	4	4	4	4	4	5	4	4	4	4	4	4	4	5
131	5	4	4	4	4	4	4	4	5	4	4	4	4	4	4	4	5
132	5	4	4	4	5	4	4	4	5	4	4	4	5	4	4	5	5
133	5	5	4	4	5	4	5	4	5	4	5	5	5	4	4	5	5
134	5	5	4	4	5	5	5	4	5	4	5	5	5	4	5	5	5
135	5	5	5	4	5	5	5	4	5	4	5	5	5	4	5	5	5
136	5	5	5	4	5	5	5	4	5	5	5	5	5	5	5	5	5
137	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
138	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
139	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
140	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
141	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
142	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6
143	6	5	5	5	6	5	5	5	5	5	5	5	5	5	5	5	6
144	6	5	5	5	6	5	5	5	5	5	5	5	5	5	5	5	6
145	6	5	5	5	6	5	5	5	6	5	5	5	6	5	5	5	6
146	6	5	5	5	6	5	5	5	6	5	5	5	6	5	5	5	6
147	6	5	5	5	6	5	5	5	6	5	5	5	6	5	5	5	6
148	6	6	5	5	6	5	5	5	6	5	5	5	6	5	5	5	6
149	6	6	5	5	6	5	5	5	6	5	5	5	6	5	5	5	6
150	6	6	5	5	6	5	5	5	6	5	5	5	6	5	5	6	6
151	6	6	5	5	6	5	5	5	6	5	5	5	6	5	5	6	6
152	6	6	5	5	6	5	5	5	6	5	5	5	6	5	5	5	6

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>

153	6	6	5	5	6	5	5	5	6	5	5	5	6	5	5	6	6
154	6	6	5	5	6	5	5	5	6	5	5	5	6	5	5	6	6
155	6	6	5	5	6	5	5	5	6	5	5	5	6	5	5	6	6
156	6	6	5	5	6	5	5	5	6	5	5	5	6	5	5	6	6
157	6	6	5	5	6	5	5	5	6	5	5	5	5	5	5	6	6
158	6	6	5	5	6	5	5	5	6	5	5	5	6	5	5	6	6
159	6	6	5	5	6	5	5	5	6	5	5	5	6	5	5	5	6
160	6	6	5	5	6	5	5	5	6	5	5	5	5	5	5	6	6
161	6	6	5	5	6	5	5	5	6	5	5	5	6	5	5	5	6
162	6	6	5	5	6	5	5	5	5	5	5	5	5	5	5	5	6
163	6	6	5	5	6	6	5	5	5	5	5	5	5	5	5	5	6
164	6	6	5	5	6	6	5	5	5	5	5	5	5	5	5	6	6
165	6	6	5	5	6	6	5	5	5	5	5	6	5	5	5	6	6
166	6	6	5	5	6	6	5	5	6	5	5	5	6	5	5	6	6
167	6	6	5	5	6	6	5	5	6	5	5	6	6	5	5	6	6
168	6	6	6	5	6	6	5	6	6	5	5	6	6	5	5	6	6
169	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	6	6
170	6	6	6	6	6	6	6	6	6	6	6	6	6	5	6	6	6
171	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
172	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
173	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
174	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
175	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
176	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
177	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
178	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
179	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
180	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6

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)

Test date	2016-07-21	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AOK-200WiU-X(5700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160710-	120.0	60	1.654	197.9	0.9971	7.81
C2	277.0	60	0.7468	192.6	0.9310	12.82
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

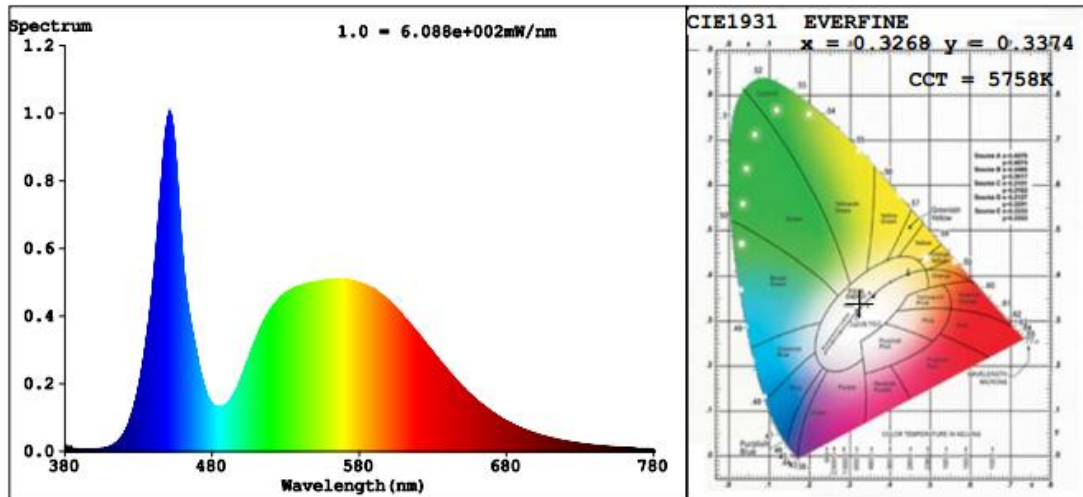
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	76	R9	0
Frequency (Hz)	60	R2	81	R10	53
CCT (K)	5758	R3	83	R11	76
Duv	0.0007	R4	78	R12	48
Chromaticity (x, y)	x=0.3268 y=0.3374	R5	76	R13	76
Chromaticity (u', v')	u'=0.2044 v'=0.4748	R6	73	R14	90
Color Rendering Index (CRI)	77.0	R7	84	R15	72
R9	0	R8	65	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V4.0 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	27229	26616	$\geq 10000(-10\%)$	
Luminous Efficacy (lm/W)	137.59	138.19	Standard: $\geq 105(-3\%)$	Premium: $\geq 130(-3\%)$

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>

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2016-07-01	2017-06-30
ST-R-331	Spectral analysis system HAAS-2000	2016-07-01	2017-06-30
D204	Standard Lamp	2016-07-01	2017-06-30
PF2010	Power Meter for Integrating Sphere	2016-07-01	2017-06-30
EE-09	Goniophotometer system	2016-07-01	2017-06-30
D908S	Standard Lamp	2016-07-01	2017-06-30
PF210	Power Meter for Goniophotometer	2016-07-01	2017-06-30
ST-R-181A	Temperature Tester	2016-07-01	2017-06-30
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

******* 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>