

LM-79-08 Test Report

For

Antec Lighting Inc

(Brand Name: )
Quality, Honesty, Service and Innovation

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

Model name(s):

AOK-25WiP-NV-L3-XX-XX80-T5-A

Report Type: Testing and Report According to IES LM-79-2008
Type of Luminaire: Outdoor Pole/Arm-Mounted Area and Roadway Luminaires
Report Date: 2019-03-25
Ningbo TengLi Testing Co., Ltd
Prepared By: 2nd floor, Block B, Ningbo Testing and Certification Base,
No. 66 Qingyi Road, Ningbo National Hi-Tech Zone,
Ningbo, Zhejiang

Test & Report By:

Xeon Ren

Engineer: Xeon Ren

Review By:

Johnson Sun

Manager: Johnson Sun

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:		
Model Number	AOK-25WiP-NV-L3-XX-XX80-T5-A	
Remark	The first “XX” can be “00” for without sensor or “SN” for with sensor function or “PH” for Plug-In photocontrol The second “XX” represents different CCT as below: 30=3000K, 35=3500K, 40=4000K, 50=5000K, 57=5700K;	
Representative (Tested) Model	AOK-25WiP-NV-L3-00-3080-T5-A AOK-25WiP-NV-L3-00-5780-T5-A	
Model Difference	All construction and rating are the same, except CCT	
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	
LED Manufacturer	LUMILEDS	
LED Model	3000K: L130-3080003000X21 5000K: L130-5780003000X21	
Dimming	Dimmable	
Sample Number	JAE180920-OTA1(3000K) JAE180920-OTA2(5700K)	
Date of Receipt	2019-03-08	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

1.2 Rated Values:	
Rated Voltage / Frequency	100-277Vac, 50/60Hz
Nominal Power	25W
Rated Initial Lamp Lumen	--
Declared CCT	3000K, 3500K, 4000K, 5000K, 5700K;

1.3 Test Specifications:

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 C78.377-2015 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

1.4 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 Summary of Test Result

Criteria Item	Measured Value			Compliance	Requirement (DLC V4.4)	
Power (W)	3000K	120V	25.86	N/A	N/A	
		277V	25.62			
	5700K	120V	26.06			
		277V	25.87			
Power Factor	3000K	120V	0.9843	Pass	>= 0.9(-3%)	
		277V	0.8762			
	5700K	120V	0.9792			
		277V	0.8806			
THD %	3000K	120V	3.48	Pass	<= 20(+5)	
		277V	11.58			
	5700K	120V	4.72			
		277V	10.91			
CRI	3000K	83.1		Pass	>= 65(-2)	
	5700K	82.8				
CCT (K)	3000K	3052		Pass	<=5700K	
	5700K	5536				
Luminous Intensity Distribution	Zonal lumens in the 0-90 °		99.7%	Pass	>= 100(-1)	
	Zonal lumens in the 80-90 °		0.5%	Pass	<= 10(+3)	
Total Luminous	3000K	120V	3350.2	Pass	>=1000(-10%)	
		277V	3347.2			
	5700K	120V	3563			
		277V	3567			
Luminous Efficacy	3000K	120V	129.57	Pass	Standard: >= 90(-3%)	Premium: >= 110(-3%)
		277V	130.65			
	5700K	120V	136.72			
		277V	137.88			

2.2 Electrical, Photometric and Chromaticity Measurements

Test date	2019-03-19	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AOK-25WiP-NV-L3-00-3080-T5-A		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE180920-OTA1	120.1	60	0.2189	25.86	0.9843	3.48
	277.0	60	0.1053	25.62	0.8762	11.58

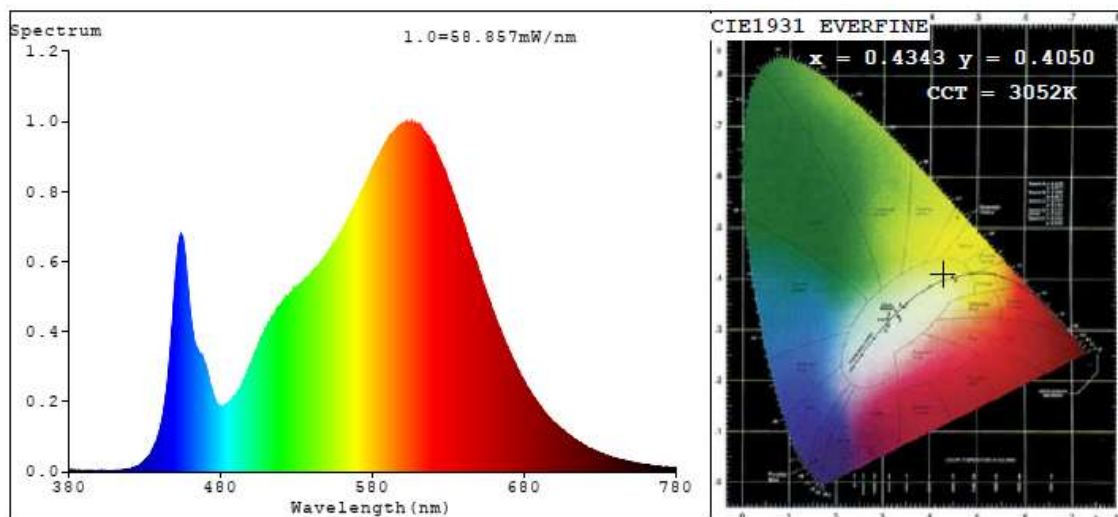
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	82	R9	9
Frequency (Hz)	60	R2	92	R10	80
CCT (K)	3052	R3	97	R11	80
Duv	0.0007	R4	81	R12	66
Chromaticity (x, y)	x=0.4343 y=0.4050	R5	82	R13	84
Chromaticity (u', v')	u'=0.2485 v'=0.5214	R6	89	R14	99
Color Rendering Index (CRI)	83.1	R7	83	R15	74
R9	9	R8	60	--	--

Photometric Measurement – Goniophotometer Method:

Parameter	Result	
Test Voltage (V)	120.1	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	3350.2	3347.2
Luminous Efficacy (lm/W)	129.57	130.65
Zonal lumens in the 0-90 °	99.7%	--
Zonal lumens in the 80-90 °	0.5%	--
Beam Angle (°)	142.0	--
Center Beam Candle Power (cd)	530	--

Spectral Power Distribution & Chromaticity Diagram



Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	456.4	13.6%
0-40	842.7	25.2%
0-60	2,345.8	70%
60-90	994.2	29.7%
70-100	216.2	6.5%
90-120	7.4	0.2%
0-90	3,340.0	99.7%
90-180	9.8	0.3%
0-180	3,349.8	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	51.0	1.5%	90-100	3.1	0.1%
10-20	151.6	4.5%	100-110	2.4	0.1%
20-30	253.7	7.6%	110-120	1.9	0.1%
30-40	386.3	11.5%	120-130	1.3	0%
40-50	606.8	18.1%	130-140	0.6	0%
50-60	896.4	26.8%	140-150	0.3	0%
60-70	781.0	23.3%	150-160	0.1	0%
70-80	196.9	5.9%	160-170	0.0	0%
80-90	16.2	0.5%	170-180	0.0	0%

Photometric Data

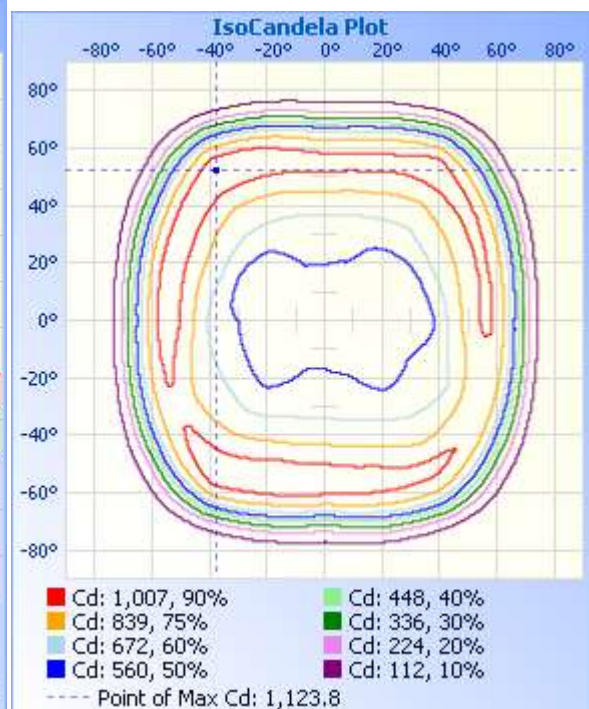
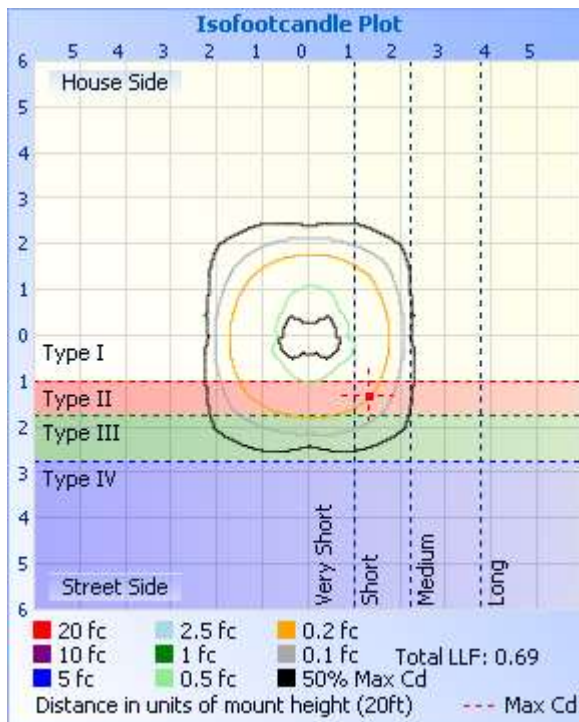
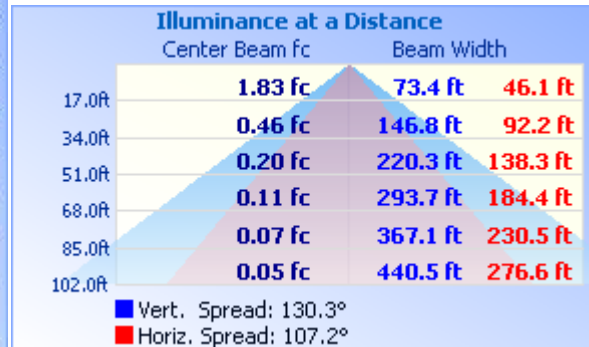
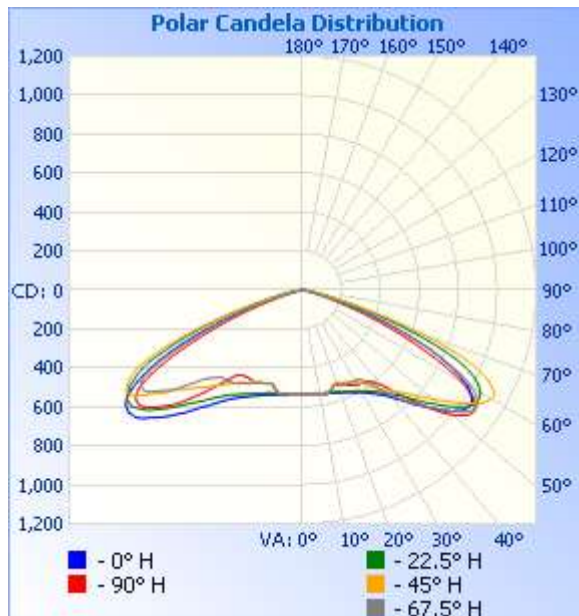


Table--1

UNIT: cd

C (DEG) γ (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	530	530	530	530	530	530	530	530	530	530	530	530	530	530	530	530			
5	532	534	532	531	533	532	532	535	533	533	532	535	534	533	533	535			
10	539	537	534	535	538	535	537	542	539	539	539	542	544	541	538	539			
15	530	525	522	544	546	543	534	537	542	537	540	553	555	549	536	533			
20	508	504	498	551	560	558	507	514	515	513	510	569	574	562	508	509			
25	525	513	508	569	578	572	522	533	536	530	528	593	599	586	521	524			
30	528	505	527	592	605	599	542	538	559	559	552	622	636	616	545	554			
35	534	549	587	630	648	635	601	576	574	609	591	672	690	657	581	585			
40	604	658	643	688	719	691	669	700	636	675	666	749	780	727	635	600			
45	766	751	709	782	833	787	749	826	807	724	758	864	897	823	702	636			
50	925	877	809	911	959	917	868	962	991	813	872	1000	1016	950	794	746			
55	1026	1000	949	1019	1044	1038	1013	1071	1079	966	1002	1092	1094	1050	924	900			
60	943	1017	1068	1016	977	1056	1118	1009	946	971	1092	1069	1014	1037	1047	963			
65	611	784	1015	845	728	911	1020	729	611	741	1008	868	752	870	932	707			
70	271	379	660	497	372	538	648	339	267	354	614	512	381	530	569	349			
75	74.2	103	231	183	141	200	214	96.3	75.9	103	198	193	153	205	180	98.3			
80	19.6	25.8	54.6	57.3	50.1	61.1	51.9	26.1	20.4	25.2	45.1	62.8	57.9	62.9	40.8	25.0			
85	6.46	8.58	12.9	13.6	12.6	14.8	13.2	8.73	6.90	7.14	9.45	15.4	13.9	14.8	8.98	7.28			
90	3.05	4.68	6.28	5.68	4.86	5.61	6.30	4.68	3.18	2.28	1.36	0.36	0.00	0.38	1.56	2.30			
95	2.64	4.46	6.04	4.39	3.84	4.34	6.03	4.46	2.50	1.60	1.07	0.41	0.00	0.41	1.08	1.71			
100	2.50	4.13	4.81	3.84	3.60	3.81	4.85	4.15	2.46	1.37	1.03	0.43	0.03	0.47	1.10	1.35			
105	2.53	3.55	4.06	3.18	3.11	3.21	4.11	3.66	2.58	1.35	1.00	0.55	0.22	0.60	1.09	1.35			
110	2.55	3.05	3.10	3.02	2.89	3.07	3.12	3.30	2.58	1.34	0.96	0.91	0.47	0.90	1.08	1.35			
115	2.45	2.37	2.53	2.66	2.77	2.80	2.41	2.59	2.56	1.32	0.93	0.92	0.66	0.90	1.07	1.35			
120	2.31	1.96	1.98	2.19	2.31	2.38	1.92	2.18	2.53	1.87	0.79	0.93	0.66	0.90	0.82	1.96			
125	1.96	1.43	1.77	1.81	1.35	1.97	1.40	1.52	2.17	2.08	0.63	0.88	0.65	0.90	0.68	2.05			
130	1.18	1.10	1.81	1.21	0.96	1.21	1.28	1.13	1.10	2.06	0.69	0.47	0.60	0.44	0.85	1.70			
135	0.83	0.80	2.06	0.69	0.74	0.66	1.64	0.72	0.74	0.68	0.77	0.33	0.44	0.41	0.68	0.63			
140	0.55	0.55	2.06	0.39	0.58	0.42	2.19	0.52	0.49	0.14	0.30	0.03	0.25	0.05	0.08	0.16			
145	0.28	0.74	2.03	0.22	0.41	0.33	1.92	0.44	0.00	0.08	0.00	0.00	0.05	0.00	0.00	0.00			
150	0.08	1.73	0.76	0.11	0.27	0.20	0.39	1.37	0.03	0.08	0.00	0.00	0.05	0.00	0.00	0.00			
155	0.60	1.32	0.11	0.05	0.11	0.13	0.08	1.05	0.33	0.08	0.00	0.00	0.05	0.00	0.00	0.00			
160	0.33	0.22	0.05	0.05	0.08	0.10	0.08	0.17	0.08	0.08	0.06	0.05	0.05	0.03	0.00	0.00			
165	0.19	0.16	0.05	0.05	0.08	0.08	0.08	0.16	0.09	0.09	0.08	0.05	0.05	0.11	0.08	0.06			
170	0.18	0.15	0.05	0.05	0.08	0.08	0.08	0.15	0.10	0.10	0.10	0.05	0.05	0.08	0.08	0.06			
175	0.17	0.14	0.05	0.05	0.08	0.08	0.08	0.14	0.11	0.11	0.13	0.05	0.05	0.08	0.08	0.06			
180	0.14	0.14	0.05	0.05	0.08	0.08	0.08	0.14	0.11	0.14	0.14	0.05	0.05	0.08	0.08	0.08			

2.3 Electrical, Photometric and Chromaticity Measurements

Test date	2019-03-15	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	AOK-25WiP-NV-L3-00-5780-T5-A		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE180920-OTA2	120.0	60	0.2218	26.06	0.9792	4.72
	277.0	60	0.1061	25.87	0.8806	10.91

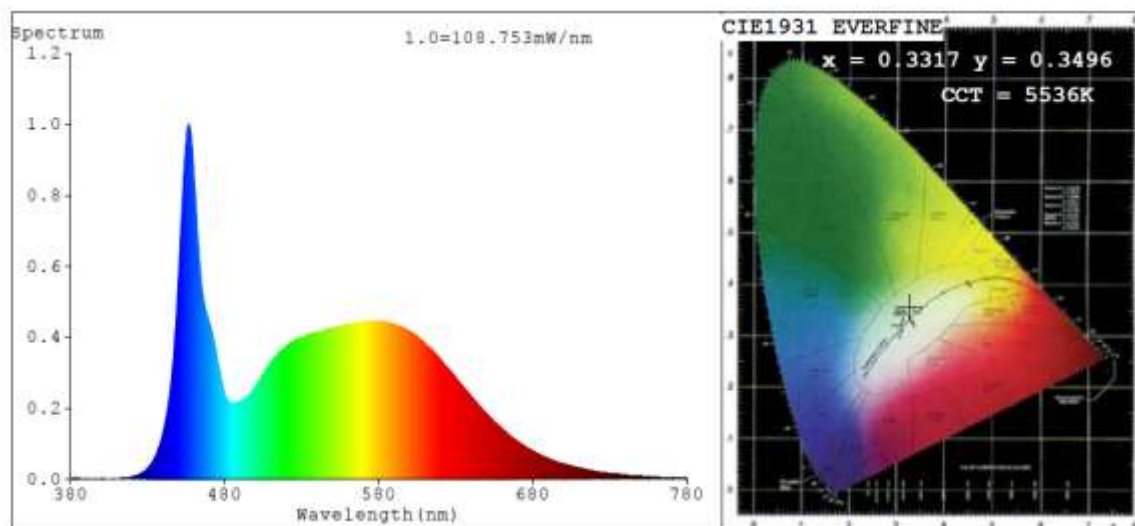
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	81	R9	6
Frequency (Hz)	60	R2	92	R10	78
CCT (K)	5536	R3	94	R11	77
Duv	0.0047	R4	78	R12	54
Chromaticity (x, y)	x=0.3317 y=0.3496	R5	81	R13	85
Chromaticity (u', v')	u'=0.2031 v'=0.4817	R6	86	R14	98
Color Rendering Index (CRI)	82.8	R7	85	R15	76
R9	6	R8	65	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	3563	3567
Luminous Efficacy (lm/W)	136.72	137.88

Spectral Power Distribution & Chromaticity Diagram



.4 Performance Assessment:

Model name	CCT(K)	Total Luminous (lm)	Power (W)	Luminous Efficacy (lm/W)
AOK-25WiP-NV-L3-00-3080-T5-A	3000K	3350.2	25.86	129.57
AOK-25WiP-NV-L3-00-3580-T5-A	3500K	3393 ^{*1}	25.96 ^{*2}	130.70 ^{*3}
AOK-25WiP-NV-L3-00-4080-T5-A	4000K	3435 ^{*1}	25.96 ^{*2}	132.32 ^{*3}
AOK-25WiP-NV-L3-00-5080-T5-A	5000K	3520 ^{*1}	25.96 ^{*2}	135.59 ^{*3}
AOK-25WiP-NV-L3-00-5780-T5-A	5700K	3563	26.06	136.73

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

$$3393 = (3563 - 3350.2) / 5 * 1 + 3350.2$$

$$3435 = (3563 - 3350.2) / 5 * 2 + 3350.2$$

$$3520 = (3563 - 3350.2) / 5 * 4 + 3350.2$$

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

$$25.96 = (25.86 + 26.06) / 2$$

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

$$130.70 = 3393 / 25.96$$

$$132.32 = 3435 / 25.96$$

$$135.59 = 3521 / 25.96$$

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-702	2 meter Integrating Sphere	Verified by D204 standard lamp	
ST-R-701	Spectral analysis system HAAS-2000	Verified by D204 standard lamp	
ST-R-705	Standard Lamp	2019-02-07	2020-02-06
ST-R-704	Power Meter for Integrating Sphere	2019-01-06	2020-01-05
ST-R-714	Goniophotometer system	Verified by D908S standard lamp	
ST-R-710	Standard Lamp	2019-02-12	2020-02-11
ST-R-711	Power Meter for Goniophotometer	2019-01-06	2020-01-05
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

4. Product Photo



******* END OF REPORT *******