

LM-79-08 Test Report

For

Antec Lighting Inc

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

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

Architectural Flood and Spot Luminaires

Model name(s): AOK-300WoF-NV-X5-XX-XX70-30-P

Remark: The first "XX" can be "00" for without sensor or "SN" for with Photocontrol function. The second "XX" represents different CCT as below: 30=3000K, 40=4000K, 50=5000K, 57=5700K; "P" can be blank, "A" or "B", blank is ceiling and wall mounted, "A" stands for Ceiling mounted only, "B" stands for Wall mounted only.

Representative (Tested) Model:
AOK-300WoF-NV-X5-00-3070-30-A
AOK-300WoF-NV-X5-00-5770-30-A

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

Test & Report By:

Clint Chen

Engineer: Clint Chen

Date: Jul.29,2018

Review By:

John Li

Manager: John Li

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.

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

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<http://www.standard-tech.com>

1.1 Product Information:

Organization Name	Antec Lighting Inc	
Brand Name		
Model Number	AOK-300WoF-NV-X5-XX-XX70-30-P	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Architectural Flood and Spot Luminaires	
Rated Voltage / Frequency	100-277V ac, 50/60 Hz	
Nominal Power	300W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K, 4000K, 5000K, 5700K.	
LED Manufacturer	Lumileds	
LED Model	L150-3070500600000 L150-5770500600000	
Sample Number	JAE180410-J1(3000K), J2(5700K)	
Lamp Length	--	mm
Lamp Width	--	mm
Number of Units (modular products)	N/A	s
Photo		
		

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1.2 Test Specifications:

Date of Receipt	Jul.23,2018
Date of Test	Jul.25,2018
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	2018-07-25	Test Ambient:	25.2 °C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	AOK-300WoF-NV-X5-00-3070-30-A		

Electrical Measurement :

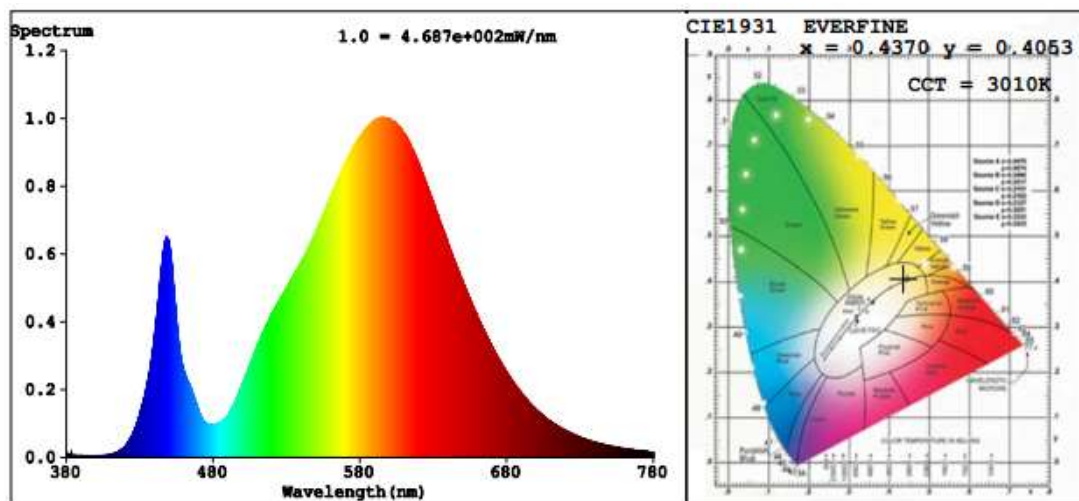
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE180410	120.0	60	2.5669	307.1	0.9970	4.77
-J1	277.0	60	1.1167	293.6	0.9492	8.62
DLC Pass Criteria					$\geq 0.9(-3\%)$	$\leq 20(+5)$

Chromaticity Measurement -Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	70	R9	0
Frequency (Hz)	60	R2	82	R10	59
CCT (K)	3010	R3	93	R11	65
Duv	0.0005	R4	70	R12	49
Chromaticity (x, y)	x=0.4370 y=0.4053	R5	69	R13	72
Chromaticity (u', v')	u'=0.2501 v'=0.5219	R6	75	R14	96
Color Rendering Index (CRI)	73.2	R7	80	R15	63
R9	0	R8	48	--	--

Photometric Measurement –Goniophotometer Method:

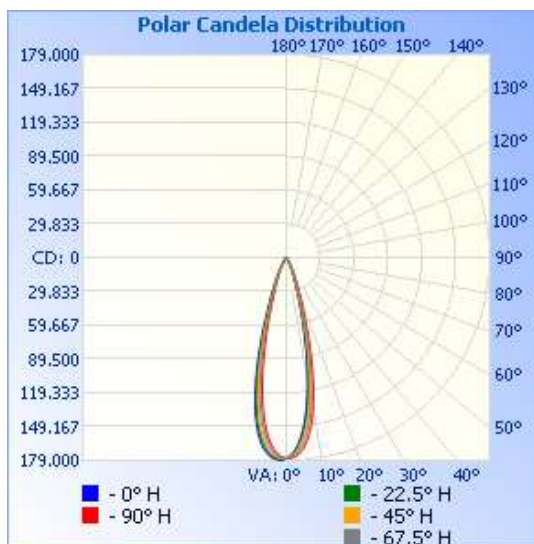
Parameter	Result		DLC V4.3 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	46943	45940	>=30000(-10%)	
Luminous Efficacy (lm/W)	152.86	156.47	Standard: >= 100(-3%)	Premium: >= 120(-3%)
Most Worst Luminous/Highest Watts	149.59			
Zonal lumens in the 0-90 °zone (%)	99.6	--	>=85(-3)	
Beam Angle (°)	27.2	--	--	
Center Beam Candle Power (cd)	177021	--	--	

Spectral Power Distribution & Chromaticity Diagram

Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	42,051.9	89.7%
0-40	44,199.5	94.2%
0-60	45,861.1	97.8%
60-90	872.8	1.9%
70-100	359.3	0.8%
90-120	7.6	0%
0-90	46,733.9	99.6%
90-180	169.0	0.4%
0-180	46,902.9	100%

Lumens Per Zone					
Zone	Lumens	%Total	Zone	Lumens	%Total
0-10	14,634.4	31.2%	90-100	3.6	0%
10-20	19,998.2	42.6%	100-110	1.8	0%
20-30	7,419.2	15.8%	110-120	2.2	0%
30-40	2,147.7	4.6%	120-130	3.5	0%
40-50	928.1	2.0%	130-140	10.8	0%
50-60	733.5	1.6%	140-150	32.5	0.1%
60-70	517.2	1.1%	150-160	55.0	0.1%
70-80	283.5	0.6%	160-170	43.8	0.1%
80-90	72.2	0.2%	170-180	15.8	0%

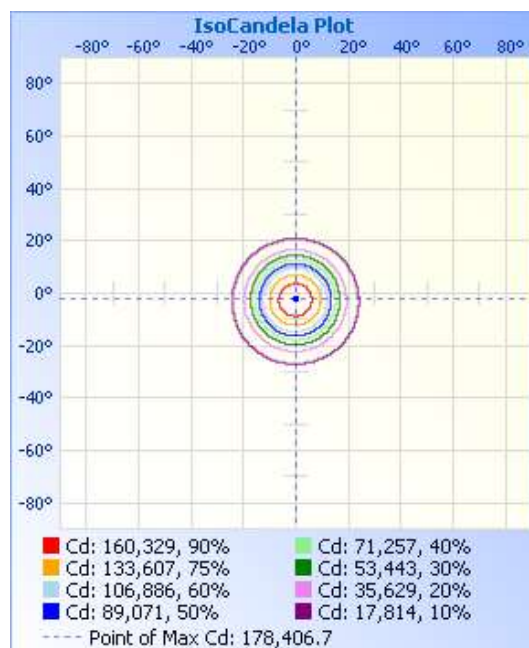
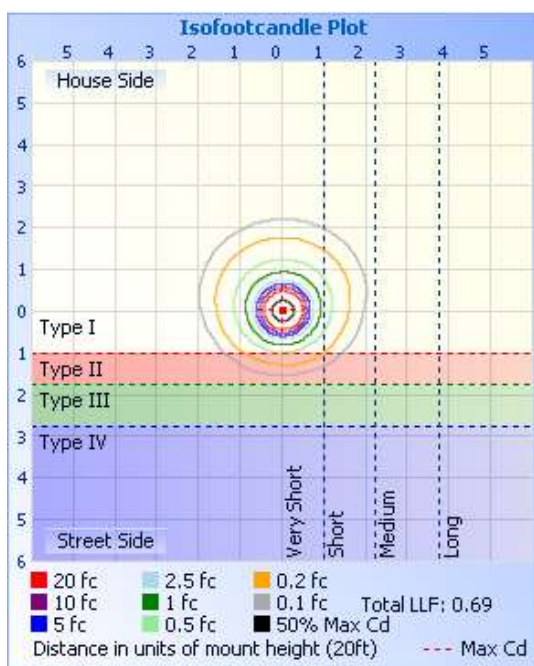
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width
17.0ft	612.5 fc	8.3 ft 8.3 ft
34.0ft	153.1 fc	16.6 ft 16.6 ft
51.0ft	68.1 fc	24.9 ft 24.9 ft
68.0ft	38.3 fc	33.2 ft 33.2 ft
85.0ft	24.5 fc	41.4 ft 41.5 ft
102.0ft	17.0 fc	49.7 ft 49.7 ft

■ Vert. Spread: 27.4°
 ■ Horiz. Spread: 27.4°



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Table--1

UNIT: *100cd

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	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770	1770
5	1635	1601	1574	1559	1561	1581	1614	1651	1690	1721	1739	1751	1748	1729	1700	1671
10	1220	1141	1086	1062	1073	1112	1180	1258	1354	1435	1488	1513	1502	1457	1392	1312
15	653	577	522	499	509	544	608	688	792	889	966	1004	989	938	849	751
20	283	247	221	207	206	222	252	290	358	407	434	459	458	424	378	339
25	143	119	102	94.4	90.5	98.9	114	137	165	191	209	221	221	207	185	165
30	63.1	51.3	42.3	39.2	36.5	38.7	45.6	56.9	74.4	90.3	104	110	110	100.0	91.7	78.2
35	27.2	22.1	18.9	17.6	17.0	16.9	19.7	24.4	32.5	39.9	46.4	47.7	48.2	43.3	41.7	35.7
40	15.4	12.8	11.3	10.0	9.46	9.97	11.3	13.4	16.6	19.8	22.3	22.1	22.2	21.5	20.9	18.4
45	11.9	10.2	8.71	7.33	6.92	7.56	8.43	10.0	12.2	14.2	15.2	15.3	15.2	15.1	15.0	13.9
50	10.0	8.34	6.74	5.39	5.19	5.90	6.83	7.94	10.2	12.1	13.1	13.2	13.2	13.1	12.9	12.0
55	8.47	6.68	5.02	4.10	3.63	4.21	5.54	6.24	8.38	10.5	11.6	11.7	11.7	11.5	11.4	10.4
60	7.06	5.04	3.71	2.68	2.30	2.46	3.96	5.24	6.78	9.00	10.1	10.3	10.3	10.1	10.00	8.91
65	5.58	3.66	2.07	0.52	0.51	0.74	2.15	3.87	5.22	7.54	8.70	8.87	8.88	8.74	8.53	7.39
70	4.04	2.57	0.78	0.02	0.01	0.02	0.79	2.50	3.88	5.91	7.07	7.29	7.28	7.16	6.87	5.74
75	2.48	1.41	0.33	0.01	0.01	0.02	0.34	1.52	2.67	4.11	5.17	5.43	5.39	5.27	4.91	3.89
80	1.20	0.62	0.13	0.01	0.01	0.03	0.16	0.78	1.47	2.36	3.11	3.35	3.29	3.17	2.85	2.12
85	0.28	0.11	0.02	0.01	0.02	0.03	0.03	0.21	0.51	0.92	1.31	1.48	1.44	1.32	1.08	0.69
90	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.06	0.12	0.19	0.18	0.13	0.11	0.06
95	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.05	0.07	0.08	0.07	0.05	0.03
100	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.02	0.03	0.04	0.03	0.02	0.01
105	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.02	0.01	0.01
110	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.01	0.02	0.01	0.01	0.01	0.01	0.01
115	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.01	0.01	0.02	0.01	0.01
120	0.04	0.03	0.03	0.04	0.04	0.03	0.04	0.02	0.03	0.02	0.02	0.01	0.01	0.02	0.01	0.02
125	0.04	0.05	0.04	0.05	0.06	0.06	0.05	0.05	0.03	0.03	0.02	0.01	0.02	0.02	0.02	0.02
130	0.09	0.09	0.07	0.08	0.10	0.10	0.09	0.10	0.08	0.05	0.03	0.02	0.03	0.04	0.04	0.06
135	0.19	0.18	0.13	0.15	0.16	0.16	0.13	0.17	0.15	0.12	0.06	0.05	0.08	0.09	0.09	0.17
140	0.37	0.38	0.24	0.31	0.29	0.26	0.19	0.31	0.28	0.24	0.13	0.16	0.23	0.22	0.21	0.38
145	0.56	0.76	0.41	0.61	0.53	0.51	0.30	0.61	0.45	0.53	0.20	0.44	0.55	0.46	0.42	0.78
150	1.16	1.22	0.75	0.92	0.89	0.83	0.29	0.96	0.93	0.91	0.61	0.85	1.06	0.89	0.48	1.32
155	1.55	1.57	0.79	1.19	1.34	1.08	0.51	1.13	1.30	1.20	1.07	1.11	1.54	1.39	1.07	1.73
160	1.81	1.71	1.04	1.47	1.72	1.31	1.06	1.27	1.50	1.55	1.32	1.26	1.81	1.78	1.38	1.64
165	1.60	1.33	1.41	1.45	1.76	1.37	1.54	1.33	1.58	1.64	1.39	1.72	1.86	1.96	1.58	1.67
170	1.30	1.53	1.70	1.48	1.57	1.43	1.79	1.42	1.20	1.21	1.48	1.93	1.70	2.04	1.72	1.92
175	1.61	1.54	1.83	1.58	1.55	1.59	1.87	1.50	1.56	1.56	1.58	1.89	1.66	1.84	1.73	1.95
180	1.54	1.51	1.79	1.62	1.59	1.68	1.87	1.53	1.53	1.53	1.49	1.77	1.60	1.61	1.66	1.84

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2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2018-07-25	Test Ambient:	25.2 °C
Test Orientation	Horizontal	Stabilization Time (min)	90
Model Number	AOK-300WoF-NV-X5-00-5770-30-A		

Electrical Measurement :

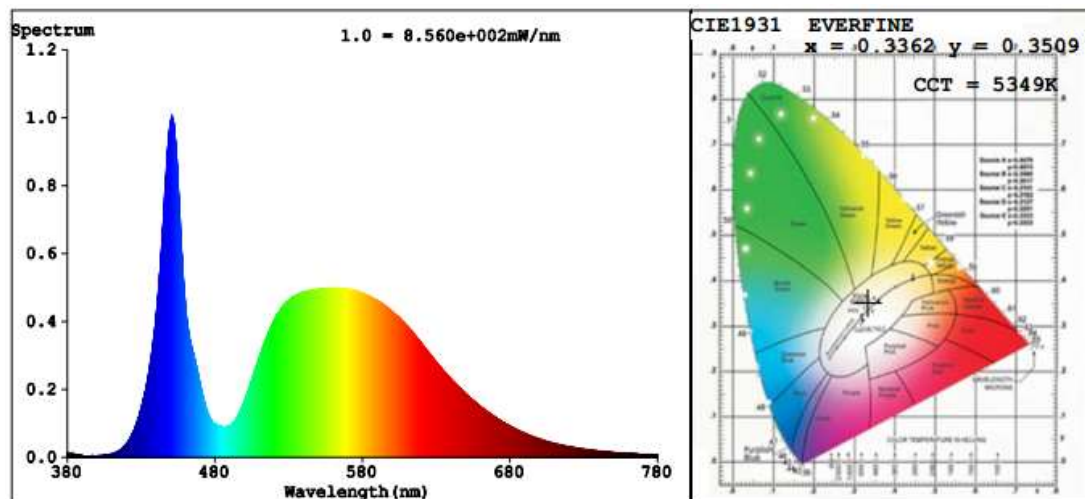
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE180410	120.0	60	2.5461	304.8	0.9976	4.21
-J2	277.0	60	1.1011	290.4	0.9521	7.95
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement -Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	71	R9	0
Frequency (Hz)	60	R2	77	R10	45
CCT (K)	5349	R3	80	R11	71
Duv	0.0034	R4	74	R12	40
Chromaticity (x, y)	x=0.3362 y=0.3509	R5	72	R13	72
Chromaticity (u', v')	u'=0.2057 v'=0.4830	R6	69	R14	89
Color Rendering Index (CRI)	73.3	R7	83	R15	67
R9	0	R8	60	--	--

Photometric Measurement –Spectroradiometer Method:

Parameter	Result		DLC V4.3 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	50258	49014	>=30000(-10%)	
Luminous Efficacy (lm/W)	164.89	168.78	Standard: >= 100(-3%)	Premium: >= 120(-3%)
Most Worst Luminous/Highest Watts	160.81			

Spectral Power Distribution & Chromaticity Diagram

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2.3 Performance Assessment:

Model name	CCT(K)	Total Luminous (lm)	Power (W)	Luminous Efficacy (lm/W)
AOK-300W _o F-NV-X5-00-3070-30-A	3000	46943	307.1	152.86
AOK-300W _o F-NV-X5-00-4070-30-A	4000	48269 ^{*1}	306.0 ^{*2}	157.74 ^{*3}
AOK-300W _o F-NV-X5-00-5070-30-A	5000	49595 ^{*1}	306.0 ^{*2}	162.08 ^{*3}
AOK-300W _o F-NV-X5-00-5770-30-A	5700	50258	304.8	164.89

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

$$48269 = (50258 - 46943) / 5 * 2 + 46943$$

$$49595 = (50258 - 46943) / 5 * 4 + 46943$$

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

$$306.0 = (307.1 + 304.8) / 2$$

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

$$157.74 = 48269 / 306.0$$

$$162.08 = 49595 / 306.0$$

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-331	2 meter Integrating Sphere	2018-07-01	2019-06-30
ST-R-327	Spectral analysis system HAAS-2000	2018-07-01	2019-06-30
D204	Standard Lamp	2018-07-12	2019-07-11
PF2010	Power Meter for Integrating Sphere	2018-07-01	2019-06-30
GO-R5000	Goniophotometer system	2018-07-01	2019-06-30
D908S	Standard Lamp	2018-07-12	2019-07-11
PF210	Power Meter for Goniophotometer	2018-07-07	2019-07-06
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 *******