

LM-79-08 Test Report

For

Standard-Tech Co., Ltd. Testing Center

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

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

Architectural Flood and Spot Luminaires

Model name(s): AOK-750WoF-HV-L5-XX-XX70-15-P

Remark: The first "XX" can be "00" for without sensor or "PH" for Plug-In photocontrol, The last "XX" represents different CCT as below: 30=3000K, 40=4000K, 50=5000K, 57=5700K, "P" represents mounting option which can be as following: A; B; C

Representative (Tested) Model: AOK-750WoF-HV-L5-00-3070-15-C
AOK-750WoF-HV-L5-00-5770-15-C

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

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Nov.18,2019

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 A2LA, or any agency of the Federal Government.

1.1 Product Information:

Organization Name	Antec Lighting Inc	
Brand Name	 <small>Quality. Honesty. Service and Innovation</small>	
Model Number	AOK-750WoF-HV-L5-XX-XX70-15-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	277-480Vac, 50/60Hz	
Nominal Power	750W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,4000K,5000K,5700K	
LED Manufacturer	Lumileds	
LED Model	LUXEON 5050	
Sample Number	JAE191009-A1(3000K),A2(5700K)	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s
Photo		
<div style="display: flex; justify-content: space-around;">   </div>		

1.2 Test Specifications:

Date of Receipt	Nov.13,2019
Date of Test	Nov.14,2019
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

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

Test date	2019-11-14	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	AOK-750Wof-HV-L5-00-3070 -15-C	Total Operating Time (min)	90

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE191009-	277.0	60	2.731	753.6	0.9961	3.80
A1	480.0	60	1.642	751.6	0.9535	7.49
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

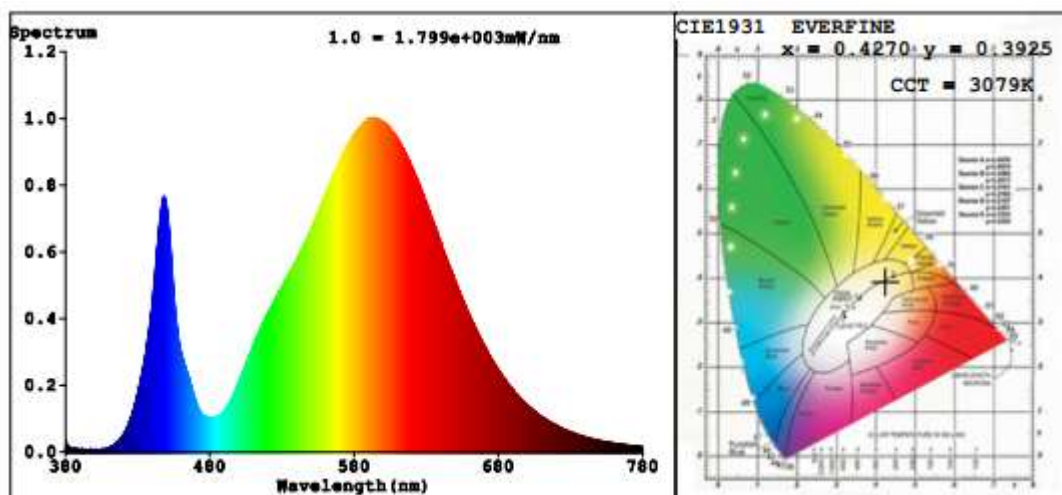
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	70	R9	0
Frequency (Hz)	60	R2	82	R10	59
CCT (K)	3079	R3	92	R11	64
Duv	-0.0033	R4	69	R12	51
Chromaticity (x, y)	x=0.4270 y=0.3925	R5	69	R13	72
Chromaticity (u', v')	u'=0.2491 v'=0.5153	R6	75	R14	95
Color Rendering Index (CRI)	73.1	R7	79	R15	64
R9	0	R8	49	--	--

Photometric Measurement – Goniophotometer Method (Test Distance: 26.000m):

Parameter	Result		DLC V4.4 Pass Criteria	
Test Voltage (V)	277.0	480.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	110263	111903	>=1000 (-10%)	
Luminous Efficacy (lm/W)	146.32	148.89	Standard: >= 100(-3%)	Premium: >= 120(-3%)
Zonal lumens in the 0-90 ° zone (%)	99.6	--	>= 85(-3)	
Beam Angle (°)	21.3	--	--	
Center Beam Candle Power (cd)	376106	--	--	

Spectral Power Distribution & Chromaticity Diagram

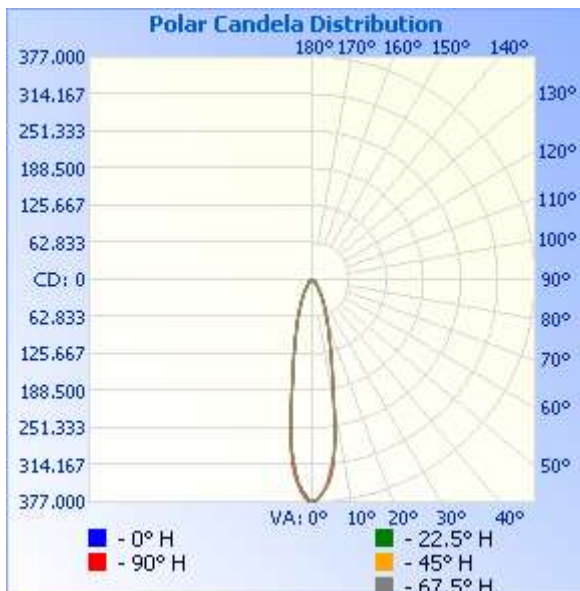


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	82,444.9	74.8%
0-40	94,696.4	86%
0-60	106,148.2	96.3%
60-90	3,604.0	3.3%
70-100	1,191.1	1.1%
90-120	31.5	0%
0-90	109,752.1	99.6%
90-180	423.8	0.4%
0-180	110,175.9	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	27,707.7	25.1%	90-100	6.4	0%
10-20	33,125.8	30.1%	100-110	9.4	0%
20-30	21,611.3	19.6%	110-120	15.7	0%
30-40	12,251.6	11.1%	120-130	28.1	0%
40-50	7,137.4	6.5%	130-140	48.3	0%
50-60	4,314.3	3.9%	140-150	79.6	0.1%
60-70	2,419.2	2.2%	150-160	116.5	0.1%
70-80	1,041.6	0.9%	160-170	89.0	0.1%
80-90	143.2	0.1%	170-180	30.8	0%

Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width
3.3ft	34,536.8 fc	1.3 ft 1.3 ft
6.6ft	8,634.2 fc	2.5 ft 2.5 ft
9.9ft	3,837.4 fc	3.8 ft 3.8 ft
13.2ft	2,158.5 fc	5.0 ft 5.0 ft
16.5ft	1,381.5 fc	6.3 ft 6.3 ft
19.8ft	959.4 fc	7.6 ft 7.5 ft

■ Vert. Spread: 21.6°
■ Horiz. Spread: 21.6°

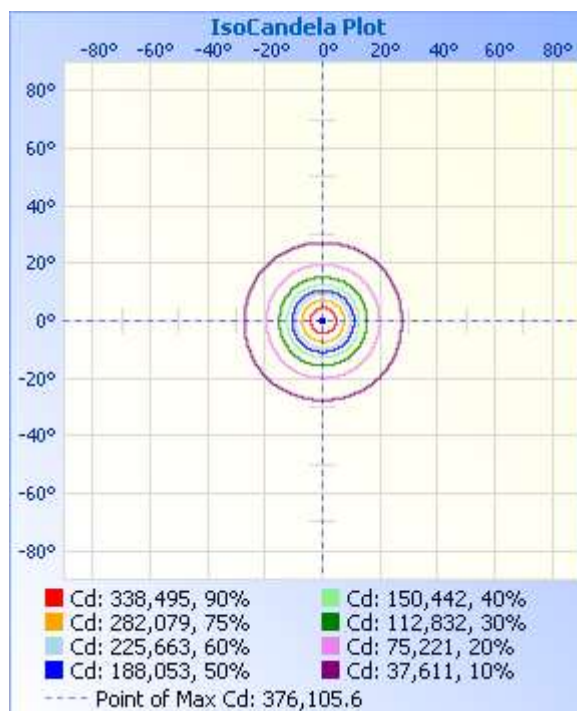
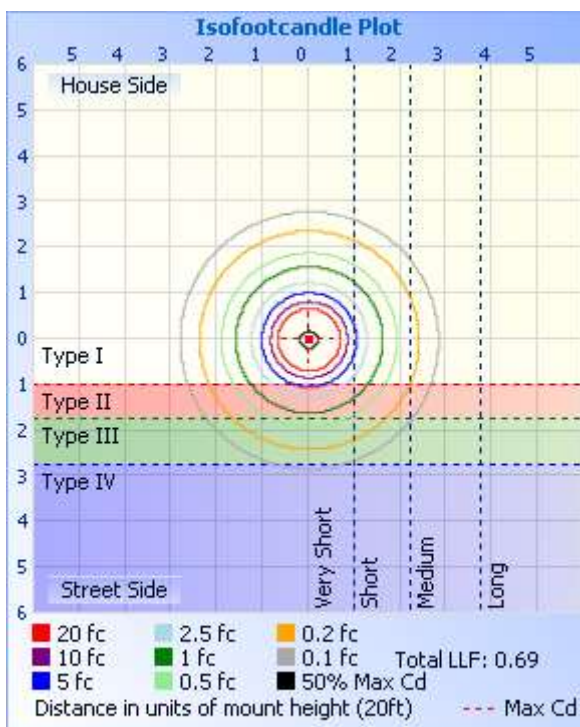


Table--1 UNIT: *100cd

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	3761	3761	3761	3761	3761	3761	3761	3761	3761	3761	3761	3761	3761	3761	3761	3761		
5	3340	3356	3377	3395	3403	3403	3405	3399	3334	3312	3291	3268	3257	3254	3261	3274		
10	2005	2036	2069	2096	2119	2130	2121	2112	2098	2072	2041	2013	1999	1985	1985	1995		
15	1137	1151	1167	1178	1183	1192	1194	1184	1178	1169	1156	1144	1134	1130	1130	1133		
20	716	724	729	739	744	749	748	745	741	735	727	719	714	713	712	713		
25	454	459	461	468	473	474	472	472	471	465	460	456	454	452	451	452		
30	293	296	298	302	305	306	304	304	304	300	296	294	292	292	291	294		
35	188	189	189	192	195	194	192	193	193	190	187	186	186	185	184	186		
40	127	128	129	130	131	131	130	130	129	128	126	125	125	125	125	126		
45	90.1	90.4	90.5	91.4	91.8	91.1	90.7	91.3	91.1	90.1	88.6	87.9	88.2	88.0	87.8	88.9		
50	67.0	67.6	68.0	68.4	68.6	68.3	68.4	68.6	68.2	67.7	66.7	65.7	65.4	65.4	65.5	66.2		
55	47.0	47.4	47.6	47.8	47.8	47.7	47.9	48.1	47.8	47.6	46.9	46.3	45.9	45.9	45.9	46.6		
60	34.1	34.6	34.6	34.8	34.6	34.7	34.8	35.0	34.7	34.7	34.2	33.8	33.4	33.4	33.5	33.9		
65	24.1	24.4	24.6	24.6	24.5	24.6	24.7	24.7	24.4	24.3	24.0	23.7	23.4	23.3	23.5	23.8		
70	16.0	16.2	16.5	16.4	16.4	16.4	16.6	16.5	16.3	16.1	16.1	15.7	15.5	15.4	15.8	15.8		
75	9.51	9.79	9.95	9.88	9.82	9.96	10.1	10.0	9.84	9.79	9.68	9.41	9.22	9.28	9.47	9.51		
80	4.26	4.44	4.49	4.48	4.43	4.59	4.64	4.58	4.51	4.49	4.30	4.13	4.00	4.11	4.18	4.24		
85	0.87	0.83	0.72	0.92	1.00	1.00	0.86	0.93	0.98	0.85	0.66	0.72	0.70	0.70	0.66	0.77		
90	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06		
95	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		
100	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06		
105	0.10	0.10	0.09	0.09	0.09	0.09	0.10	0.09	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.09		
110	0.14	0.13	0.13	0.12	0.12	0.12	0.13	0.14	0.12	0.11	0.11	0.12	0.11	0.11	0.12	0.13		
115	0.18	0.18	0.17	0.15	0.16	0.14	0.17	0.18	0.17	0.15	0.15	0.14	0.15	0.12	0.16	0.18		
120	0.24	0.24	0.23	0.18	0.16	0.19	0.23	0.24	0.22	0.20	0.22	0.19	0.17	0.16	0.23	0.23		
125	0.33	0.34	0.31	0.31	0.33	0.31	0.29	0.33	0.28	0.28	0.30	0.32	0.32	0.27	0.32	0.33		
130	0.46	0.47	0.40	0.45	0.46	0.43	0.38	0.45	0.41	0.42	0.42	0.50	0.45	0.39	0.45	0.47		
135	0.67	0.69	0.54	0.67	0.67	0.64	0.52	0.63	0.61	0.61	0.58	0.72	0.63	0.57	0.57	0.67		
140	0.98	1.00	0.59	0.92	0.90	0.91	0.64	0.89	0.90	0.89	0.75	1.04	0.85	0.86	0.60	0.99		
145	1.43	1.41	0.78	1.30	1.00	1.32	1.00	1.27	1.32	1.31	0.94	1.55	0.97	1.28	1.12	1.42		
150	2.23	2.12	1.14	1.87	2.09	2.12	1.43	1.96	2.04	2.02	0.97	2.46	2.12	2.03	1.99	1.96		
155	3.09	2.75	1.90	2.45	3.00	3.04	1.89	2.91	2.88	2.76	1.60	3.46	2.68	2.38	2.37	1.87		
160	3.55	3.05	2.94	2.77	3.56	3.49	2.75	3.29	3.44	3.37	2.96	3.85	3.68	3.22	1.92	2.30		
165	3.67	3.25	3.21	2.32	3.09	2.68	3.38	3.49	3.59	3.54	3.17	3.31	2.94	2.75	2.00	3.20		
170	3.45	3.38	3.09	2.86	2.81	3.10	3.67	3.62	3.47	3.45	3.33	3.14	3.45	2.93	2.79	3.33		
175	3.29	3.30	2.97	2.97	3.25	3.03	3.54	3.51	3.23	3.24	3.24	3.13	3.25	3.27	2.88	3.24		
180	3.03	3.12	2.86	2.94	3.04	2.76	3.20	3.14	3.02	3.03	3.11	2.87	2.93	3.04	2.75	3.20		

2.2 Electrical, Photometric and Chromaticity Measurements

Test date	2019-11-14	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	60
Model Number	AOK-750Wof-HV-L5-00-5770 -15-C	Total Operating Time (min)	90

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
JAE191009-	277.0	60	2.747	754.4	0.9915	4.63
A2	480.0	60	1.652	752.3	0.9487	8.28
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

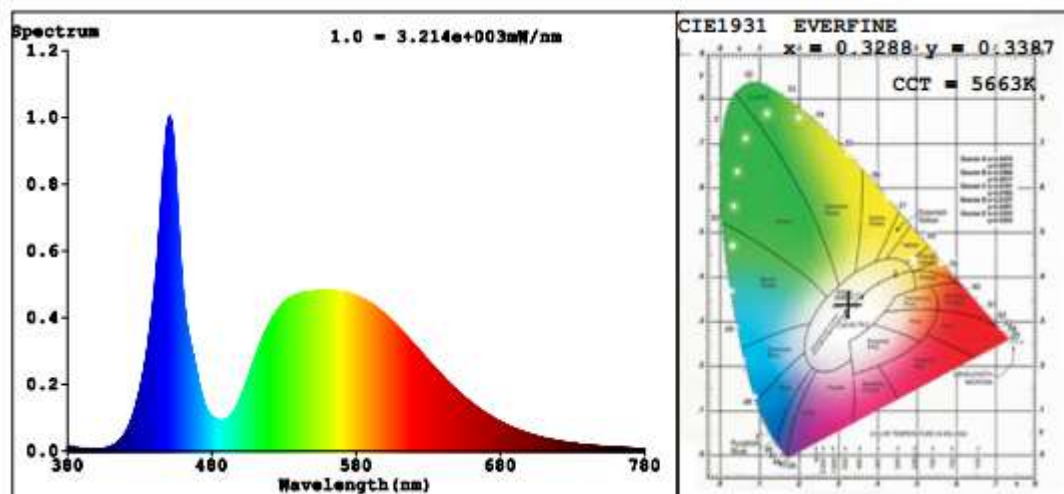
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	73	R9	0
Frequency (Hz)	60	R2	78	R10	46
CCT (K)	5663	R3	79	R11	72
Duv	0.0004	R4	76	R12	42
Chromaticity (x, y)	x=0.3288 y=0.3387	R5	74	R13	74
Chromaticity (u', v')	u'=0.2053 v'=0.4758	R6	69	R14	88
Color Rendering Index (CRI)	74.4	R7	83	R15	70
R9	0	R8	64	--	--

Photometric Measurement – Sphere-Spectroradiometer Method:

Parameter	Result		DLC V4.4 Pass Criteria	
Test Voltage (V)	277.0	480.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	115031	116629	>=1000 (-10%)	
Luminous Efficacy (lm/W)	152.48	155.03	Standard: >= 100(-3%)	Premium: >= 120(-3%)

Spectral Power Distribution & Chromaticity Diagram



Laboratory: Standard-Tech Co., Ltd. Testing Center

Report Format Number STD-QP019-409-B/0

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>

2.3 Performance Assessment:

Model name	CCT(K)	Total Luminous (lm)	Power (W)	Luminous Efficacy (lm/W)
AOK-750Wof-HV-L5-00-3070-15-C	3000K	110263	753.6	146.32
AOK-750Wof-HV-L5-00-4070-15-C	4000K	112170 ^{*1}	754.0 ^{*2}	148.77 ^{*3}
AOK-750Wof-HV-L5-00-5070-15-C	5000K	114077 ^{*1}	754.0 ^{*2}	151.30 ^{*3}
AOK-750Wof-HV-L5-00-5770-15-C	5700K	115031	754.4	152.48

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

$$112170 = (115031 - 110263) / 5 * 2 + 110263$$

$$114077 = (115031 - 110263) / 5 * 4 + 110263$$

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

$$754.0 = (753.6 + 754.4) / 2$$

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

$$148.77 = (112170 / 754.0)$$

$$151.30 = (114077 / 754.0)$$

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-423	2 meter Integrating Sphere	Verified by D204 standard lamp	
ST-R-327	Spectral analysis system HAAS-2000	Verified by D204 standard lamp	
ST-R-332	Standard Lamp	2019-07-03	2020-07-02
ST-R-333	Power Meter for Integrating Sphere	2019-06-27	2020-06-26
ST-R-355	Goniophotometer system	Verified by D908S standard lamp	
ST-R-359	Standard Lamp	2019-07-03	2020-07-02
ST-R-358	Power Meter for Goniophotometer	2019-06-27	2020-06-26
Expand Uncertainty: Photometric Measurement (Sphere):2.66%, k=2 Chromaticity Measurement(Sphere):28.6K, k=2 Photometric Measurement(Goniophotometer):2.76%, k=2			

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