NVLAP LAB CODE 201011-0

LM-79-08 Test Report

For

CEA GROUP INTERNATIONAL CO.,LTD

(Brand Name: CEA/EAEC)

Sanjiali Industrial Zone Zhucheng Road Panshi North baixiang Yueqing Zhejiang China

Architectural Flood and Spot Luminaires and Industrial buildings

Model name(s): SFL1-30

Representative (Tested) Model: SFL1-30(2700K)
SFL1-30(5700K)

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

Test & Report By:

Johnson Sun

Engineer: Johnson Sun

Date: Aug.30,2016

Review By:

Tommy Liang

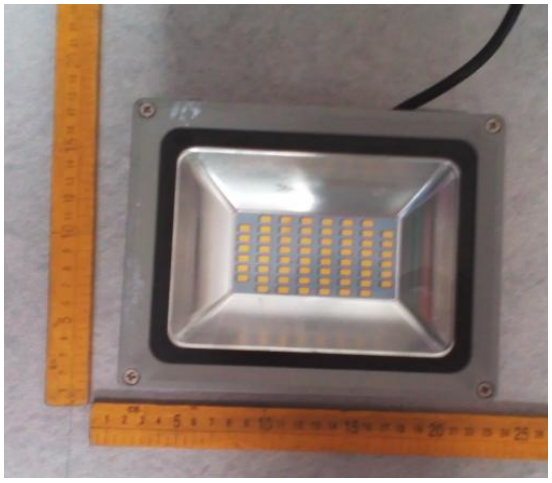
Manager: Tommy Liang

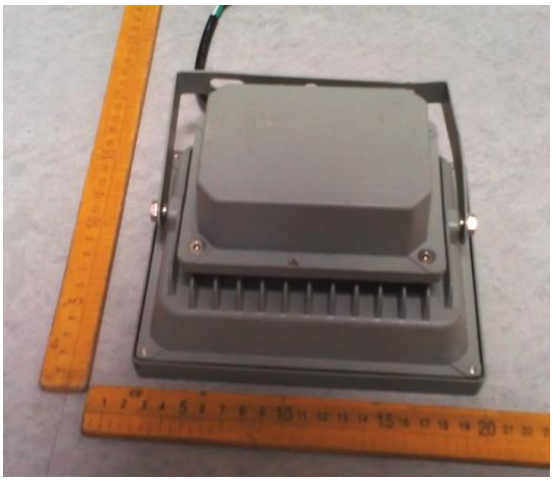
Note: This report does not imply product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

1.1 Product Information:

Organization Name	CEA GROUP INTERNATIONAL CO.,LTD	
Brand Name	CEA/EAEC	
Model Number	SFL1-30	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Architectural Flood and Spot Luminaires and Industrial buildings	
Rated Voltage / Frequency	100 -277Vac, 50/60 Hz	
Nominal Power	30W	
Rated Initial Lamp Lumen	--	
Declared CCT	2700K,3000K,3500K,4000K,4500K,5000K, 5700K	
LED Manufacturer	Zhongshan Dongguan Star Photoelectric Techology Co.,Ltd	
LED Model	5730	
Sample Number	STD160203NB-AB1(2700K),AB2(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	Aug.20,2016
Date of Test	Aug.25,2016
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 ºC ±1 ºC. 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 ºC ±1 ºC. 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	2016-08-25	Test Ambient:	25.2 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	SFL1-30(2700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD160203	120.0	60	0.2452	29.19	0.9919	10.96
NB-AB1	277.0	60	0.1141	28.68	0.9073	15.01
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

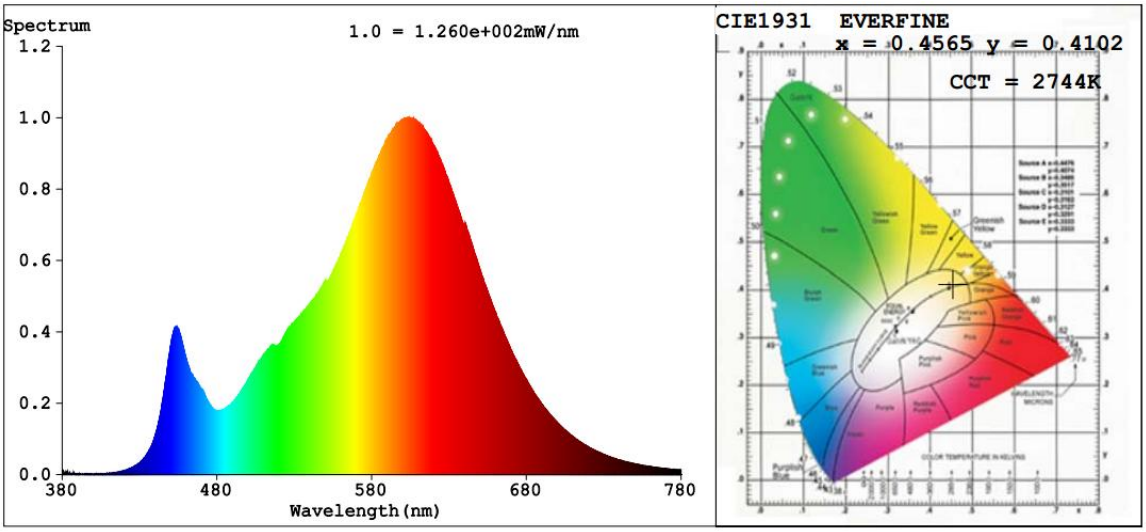
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	2744
Duv	0.0001
Chromaticity (x, y)	x=0.4565 y=0.4102
Chromaticity (u', v')	u'=0.2605 v'=0.5267
Color Rendering Index (CRI)	80.2
R9	0

Special Color Rendering Indices			
R1	79	R9	0
R2	92	R10	81
R3	94	R11	75
R4	76	R12	72
R5	79	R13	82
R6	90	R14	97
R7	79	R15	70
R8	53	--	--

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)	2630.6	2587.7	>=1000(-10%)	
Luminous Efficacy (lm/W)	90.12	90.23	Standard: >= 90(-3%)	Premium: >= 110(-3%)
Zonal lumens in the 0-90 °zone (%)	100	--	>= 85(-3)	
Beam Angle ( )	98.3	--	--	
Center Beam Candle Power (cd)	1193	--	--	

Spectral Power Distribution & Chromaticity Diagram

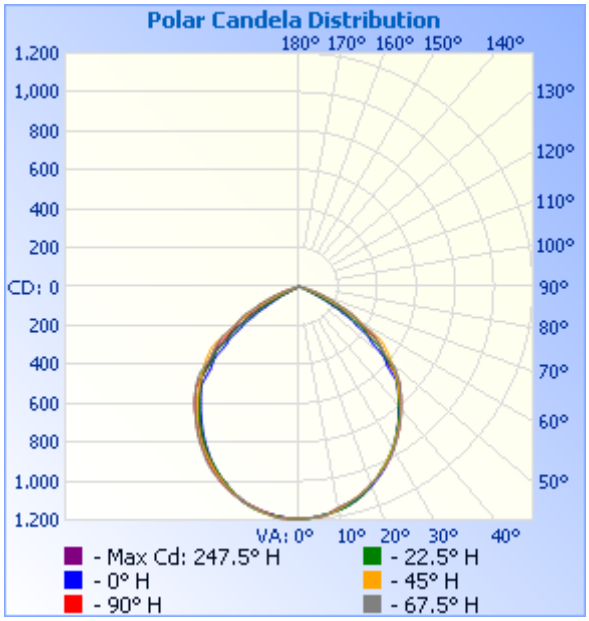


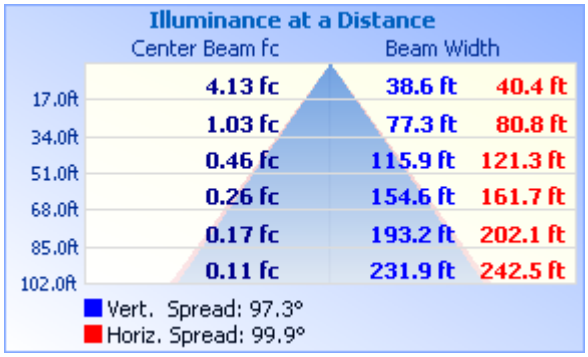
Zonal Lumen Tabulation

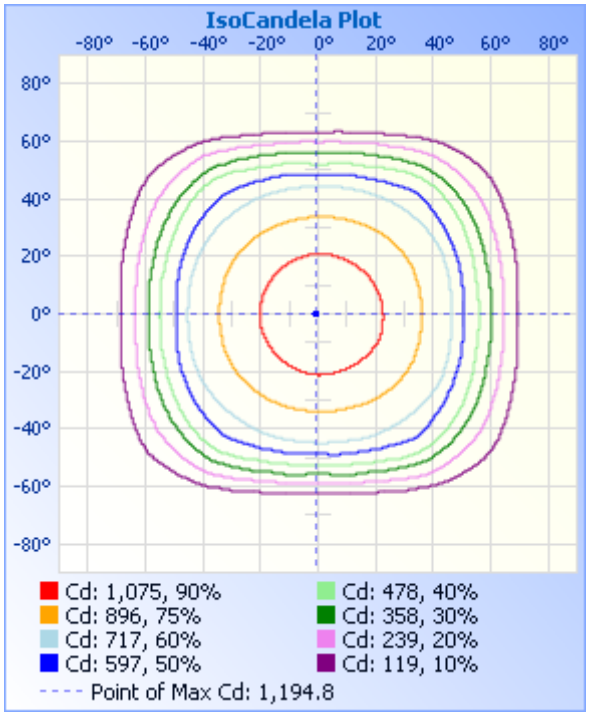
Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	905.9	34.4%
0-40	1,462.3	55.6%
0-60	2,433.5	92.5%
60-90	196.4	7.5%
70-100	25.7	1%
90-120	0.0	0%
0-90	2,629.9	100%
90-180	0.2	0%
0-180	2,630.1	100%

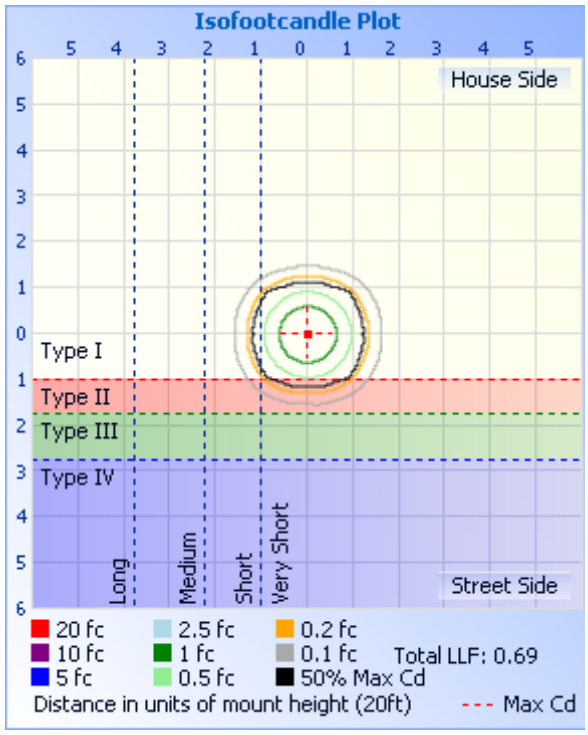
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	112.6	4.3%	90-100	0.0	0%
10-20	318.9	12.1%	100-110	0.0	0%
20-30	474.4	18.0%	110-120	0.0	0%
30-40	556.4	21.2%	120-130	0.0	0%
40-50	554.1	21.1%	130-140	0.0	0%
50-60	417.1	15.9%	140-150	0.0	0%
60-70	170.7	6.5%	150-160	0.0	0%
70-80	24.2	0.9%	160-170	0.0	0%
80-90	1.5	0.1%	170-180	0.0	0%

Photometric Data









γ (DEG) \ C (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338
0	1193	1193	1193	1193	1193	1193	1193	1193	1193	1193	1193	1193	1193	1193	1193	1193
5	1191	1192	1188	1185	1183	1185	1186	1188	1189	1189	1187	1187	1187	1187	1191	1194
10	1164	1163	1164	1170	1167	1167	1163	1157	1155	1157	1165	1168	1167	1171	1169	1166
15	1135	1133	1131	1139	1137	1136	1124	1126	1126	1126	1122	1133	1133	1137	1134	1136
20	1097	1094	1088	1087	1090	1083	1082	1080	1081	1079	1076	1078	1084	1083	1089	1099
25	1043	1044	1035	1029	1032	1022	1025	1031	1032	1029	1015	1019	1025	1025	1033	1049
30	976	981	972	964	962	958	961	967	965	964	954	951	951	957	970	983
35	906	910	902	887	881	881	889	894	893	889	882	874	870	879	898	911
40	831	831	821	803	794	796	807	814	812	807	799	791	787	797	813	830
45	750	748	732	719	712	714	718	732	732	728	709	710	706	716	724	752
50	601	633	640	587	575	590	624	632	585	634	622	572	558	579	637	627
55	498	510	549	436	408	431	532	496	493	494	533	423	360	428	548	513
60	356	362	368	291	245	289	361	349	346	348	351	227	167	229	360	363
65	228	232	203	109	73.9	106	210	225	221	225	180	61.8	30.3	61.7	181	233
70	99.1	128	75.1	23.7	22.7	23.8	69.2	125	98.0	127	52.8	20.7	19.2	19.9	44.1	129
75	10.3	22.7	12.0	13.0	12.3	12.9	12.2	28.2	20.9	29.4	10.6	11.0	9.75	10.4	9.20	28.3
80	3.85	4.64	4.62	4.84	4.39	4.85	4.68	5.36	4.67	4.60	3.86	3.62	2.80	3.21	3.20	3.84
85	0.92	1.15	1.17	1.51	1.67	1.54	1.19	1.16	1.02	0.91	0.76	0.89	0.86	0.70	0.57	0.83
90	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	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	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
100	0.01	0.03	0.02	0.00	0.00	0.00	0.00	0.03	0.01	0.02	0.01	0.00	0.00	0.00	0.01	0.01
105	0.01	0.02	0.02	0.01	0.01	0.01	0.02	0.02	0.01	0.02	0.02	0.01	0.01	0.01	0.02	0.02
110	0.02	0.02	0.02	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02
115	0.03	0.03	0.03	0.02	0.03	0.02	0.03	0.03	0.02	0.03	0.03	0.02	0.02	0.02	0.02	0.02
120	0.04	0.04	0.04	0.03	0.03	0.03	0.04	0.04	0.03	0.03	0.04	0.03	0.02	0.03	0.03	0.03
125	0.05	0.05	0.05	0.04	0.04	0.04	0.05	0.05	0.04	0.05	0.05	0.03	0.03	0.03	0.04	0.04
130	0.06	0.05	0.06	0.05	0.05	0.05	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.05	0.05
135	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.06	0.06	0.05	0.04	0.05	0.05	0.06
140	0.07	0.07	0.06	0.06	0.07	0.06	0.07	0.07	0.07	0.07	0.07	0.05	0.05	0.05	0.06	0.06
145	0.08	0.07	0.07	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.05	0.06	0.07
150	0.08	0.08	0.07	0.06	0.07	0.06	0.07	0.08	0.08	0.07	0.07	0.06	0.07	0.06	0.06	0.07
155	0.08	0.08	0.07	0.07	0.08	0.07	0.07	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.06	0.07
160	0.07	0.08	0.07	0.07	0.08	0.07	0.07	0.08	0.07	0.07	0.06	0.07	0.07	0.07	0.07	0.06
165	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.07	0.07	0.06	0.07	0.08	0.08	0.07	0.06
170	0.07	0.07	0.07	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.06	0.07	0.06	0.07	0.06	0.06
175	0.06	0.06	0.06	0.06	0.05	0.05	0.06	0.07	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.04
180	0.03	0.03	0.02	0.03	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-08-25	Test Ambient:	25.2 ºC
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	SFL1-30(5700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD160203	120.0	60	0.2511	29.91	0.9927	10.92
NB-AB2	277.0	60	0.1177	29.63	0.9085	14.97
				DLC Pass Criteria	>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

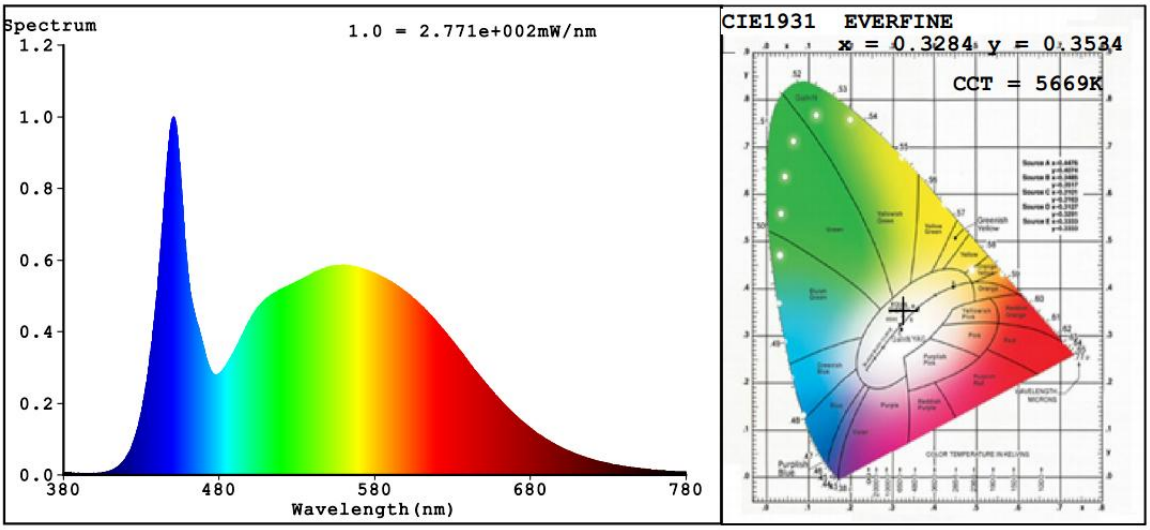
Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
CCT (K)	5669
Duv	0.0080
Chromaticity (x, y)	x=0.3284 y=0.3534
Chromaticity (u', v')	u'=0.1995 v'=0.4831
Color Rendering Index (CRI)	82.8
R9	7

Special Color Rendering Indices			
R1	79	R9	7
R2	87	R10	69
R3	93	R11	81
R4	82	R12	62
R5	81	R13	81
R6	83	R14	96
R7	89	R15	74
R8	69	--	--

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)	2813	2767	>=1000(-10%)	
Luminous Efficacy (lm/W)	94.05	93.39	Standard: >= 90(-3%)	Premium: >= 110(-3%)

Spectral Power Distribution & Chromaticity Diagram



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 ********