



Report No.: GZE160886-G

NVLAP LAB CODE 201011-0

LM-79-08 Test Report

Outdoor Full-Cutoff Wall-mounted Area Luminaires

Model name(s): LWP2-80W

Remark: The letter "X" in the model name stands for CCT as below :3=3000K, 4=4000K, 5=5000K; "YY" stands for mounting option as below WM=Wall mount; "ZZ" stands for housing color by using 2 digits to indicate all of the colors.

Representative (Tested) Model: LWP2-80WW
LWP2-80CW

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

Test & Report By:

Garman Mo

Engineer: Garman Mo

Update: Aug 31, 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

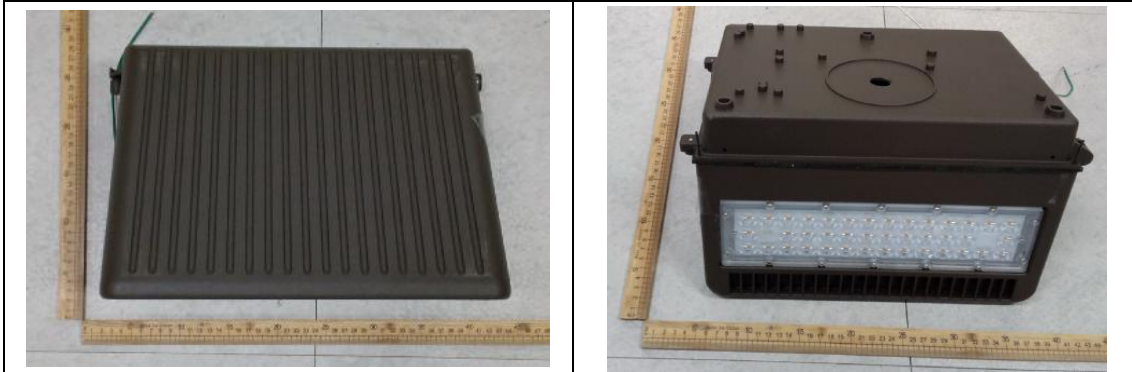
Report Format Number STD/QR4909-A/2

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	WESTGATE MFG.	
Brand Name		
Model Number		
SKU (if available)	N/A Type of	
Luminaire (for integral lamps, list base type and lamp type)	Outdoor Full-Cutoff Wall-mounted Area Luminaires	
Rated Voltage / Frequency	100 -277Vac, 50/60 Hz	
Nominal Power	80W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K,4000K,5000K	
LED Manufacturer	Philips Lumileds	
LED Model	LUXEON 3030 2D	
Sample Number	GZE160886-G1(3000K);G2(5000K)	
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.26,2016
Date of Test	: Aug.27,2016
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

<p>1) Photometric and Light Distribution Measurement – Goniophotometer Method:</p> <p>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.</p>
<p>2) Chromaticity Measurement – Sphere-Spectroradiometer Method:</p> <p>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.</p>
<p>3) Electrical Measurements:</p> <p>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.</p>

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-08-27	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LWP2-80W		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160886-	120.0	60	0.6535	77.94	0.9939	7.28
G1	277.0	60	0.3185	79.59	0.9022	10.90
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	81	R9	8
Frequency (Hz)	60	R2	90	R10	77
CCT (K)	3096	R3	97	R11	81
Duv	0.0005	R4	81	R12	70
Chromaticity (x, y)	x=0.4309 y=0.4032	R5	81	R13	83
Chromaticity (u', v')	u'=0.2471 v'=0.5201	R6	87	R14	99
Color Rendering Index (CRI)	82.8	R7	84	R15	74
R9	8	R8	61	--	--

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)	8788.9	8696.4	5000-10000 (±10%)	
Luminous Efficacy (lm/W)	112.76	109.26	Standard: >= 95(-3%)	Premium: >= 115(-3%)
Zonal lumens in the 0-90° zone (%)	99.8	--	>=100(-3)	
Zonal lumens in the 80-90° zone (%)	0.8	--	<=10(+3)	
Beam Angle (°)	123.3	--	--	
Center Beam Candle Power (cd)	2513	--	--	

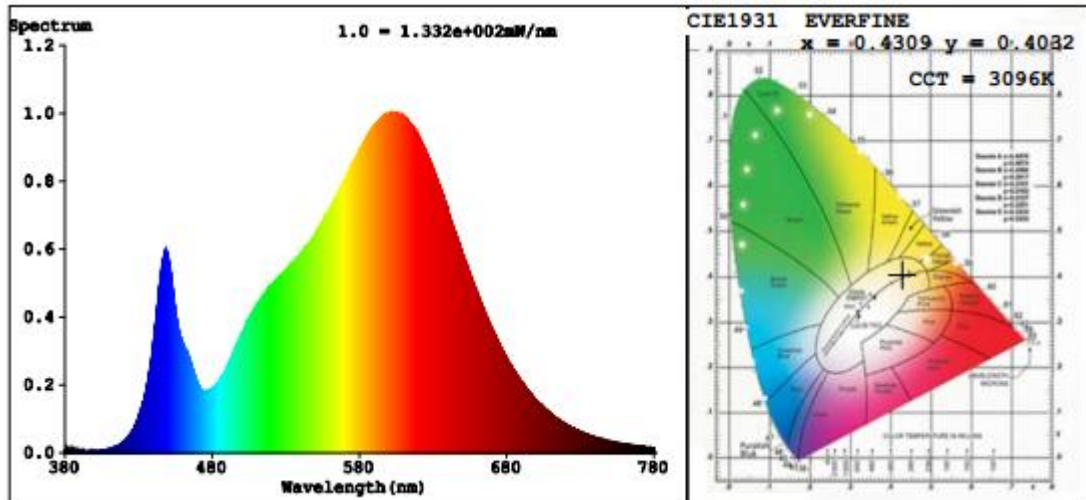
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Spectral Power Distribution & Chromaticity Diagram

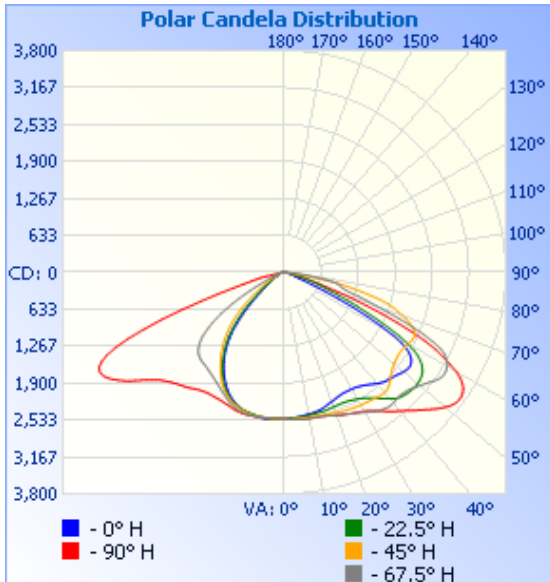


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	2,066.3	23.5%
0-40	3,525.6	40.1%
0-60	6,936.0	78.9%
60-90	1,835.5	20.9%
70-100	570.2	6.5%
90-120	4.4	0.1%
0-90	8,771.5	99.8%
90-180	15.4	0.2%
0-180	8,786.9	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	240.2	2.7%	90-100	0.5	0%
10-20	707.6	8.1%	100-110	1.5	0%
20-30	1,118.6	12.7%	110-120	2.4	0%
30-40	1,459.3	16.6%	120-130	2.8	0%
40-50	1,692.5	19.3%	130-140	2.6	0%
50-60	1,717.8	19.6%	140-150	2.2	0%
60-70	1,265.8	14.4%	150-160	1.8	0%
70-80	497.7	5.7%	160-170	1.1	0%
80-90	72.0	0.8%	170-180	0.5	0%

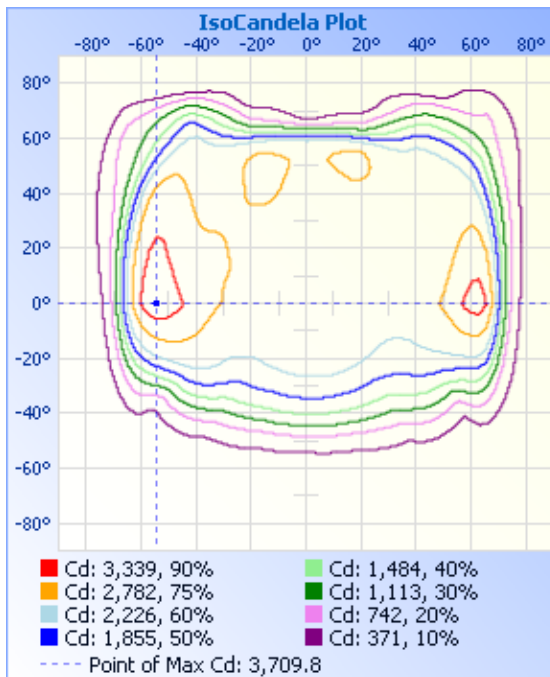
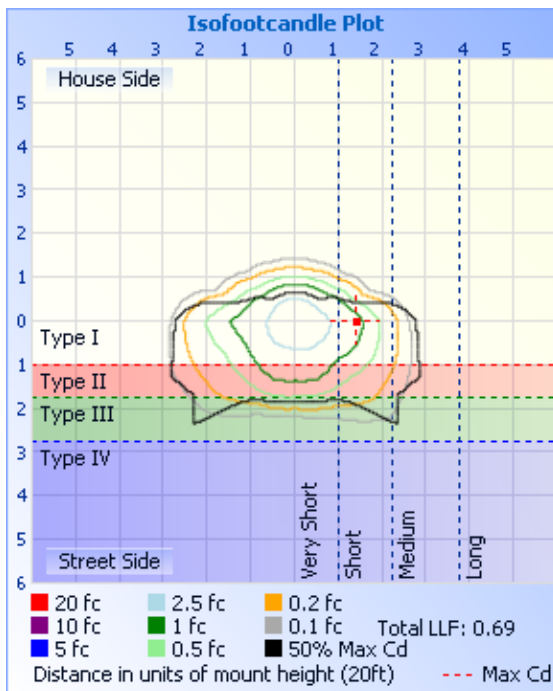
Photometric Data



Illuminance at a Distance

Distance (ft)	Center Beam fc	Beam Width
17.0ft	8.70 fc	26.3 ft
34.0ft	2.17 fc	52.6 ft
51.0ft	0.97 fc	79.0 ft
68.0ft	0.54 fc	105.3 ft
85.0ft	0.35 fc	131.6 ft
102.0ft	0.24 fc	157.9 ft

■ Vert. Spread: 75.5°
■ Horiz. Spread: 137.0°



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Table--1

UNIT: cd

C (DEG) Y (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338	
0	2513	2513	2513	2513	2513	2513	2513	2513	2513	2513	2513	2513	2513	2513	2513	2513	
5	2505	2494	2496	2483	2492	2501	2515	2532	2531	2547	2542	2541	2530	2521	2514	2510	
10	2516	2489	2473	2454	2466	2487	2517	2543	2539	2576	2562	2551	2524	2508	2517	2519	
15	2525	2494	2466	2422	2430	2474	2530	2556	2552	2583	2518	2510	2488	2474	2490	2519	
20	2503	2503	2459	2374	2361	2457	2562	2605	2608	2542	2408	2405	2408	2416	2429	2472	
25	2463	2510	2459	2337	2309	2455	2598	2674	2673	2460	2271	2256	2270	2301	2327	2369	
30	2450	2511	2466	2327	2310	2507	2626	2771	2750	2404	2116	2052	2064	2109	2152	2253	
35	2477	2495	2506	2381	2365	2629	2655	2881	2901	2422	1928	1797	1803	1842	1912	2161	
40	2577	2506	2601	2530	2486	2828	2684	2918	3104	2478	1691	1477	1461	1524	1644	2100	
45	2683	2443	2641	2701	2575	2950	2576	2910	3334	2378	1362	1054	1002	1120	1333	2059	
50	2866	2365	2558	2860	2658	2979	2451	3023	3596	2019	936	614	564	673	956	1901	
55	3248	2387	2394	2917	2660	2893	2413	3208	3710	1401	522	349	326	371	583	1511	
60	3569	2451	2360	2519	2153	2444	2451	3226	3410	697	284	243	221	244	322	904	
65	3365	2460	2264	1138	767	1377	2468	2808	2416	287	200	177	146	178	205	402	
70	1879	2152	1774	486	193	659	2152	1681	966	168	146	115	113	116	146	195	
75	588	1391	1127	142	131	227	1544	1032	320	124	80.2	86.1	102	82.1	83.9	127	
80	123	856	301	65.1	65.4	74.6	534	723	84.0	64.1	42.9	54.3	64.0	52.2	43.9	77.4	
85	39.0	348	18.1	17.0	20.1	17.9	24.0	210	35.6	20.8	15.1	17.8	15.8	19.0	17.4	23.8	
90	0.64	1.64	0.53	0.00	0.00	0.00	0.54	1.26	0.31	0.74	0.05	0.00	0.00	0.00	0.32	0.64	
95	0.47	0.11	0.00	0.00	0.00	0.00	0.00	0.16	0.64	1.53	1.00	0.00	0.00	0.00	1.22	1.17	
100	1.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.05	2.48	1.90	0.00	0.00	0.11	2.28	2.45	
105	3.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.47	3.74	2.49	1.01	0.38	1.18	2.96	3.98	
110	5.08	0.47	0.00	0.00	0.00	0.00	0.00	1.00	4.50	4.32	3.01	1.97	1.45	2.12	3.28	5.15	
115	6.02	2.26	0.00	0.00	0.00	0.00	0.00	2.00	4.45	4.58	3.44	2.44	2.56	2.71	3.65	5.71	
120	6.49	2.79	0.42	0.00	0.00	0.00	0.37	2.75	4.35	4.63	3.96	3.29	3.10	3.46	3.86	4.93	
125	6.60	3.79	0.79	0.48	0.37	0.47	0.90	3.18	4.14	4.42	3.69	3.98	4.27	4.14	3.80	4.77	
130	6.81	3.95	1.21	0.95	0.85	0.95	1.32	3.34	4.09	3.89	3.64	4.35	4.70	4.67	3.80	4.34	
135	6.29	3.84	2.00	1.49	1.44	1.65	1.90	3.39	3.88	3.74	3.32	4.09	4.75	4.56	3.64	4.13	
140	5.66	4.00	2.32	2.18	1.98	2.18	2.17	3.76	3.72	3.89	3.27	4.09	4.37	4.09	3.33	4.13	
145	5.34	3.63	2.95	2.65	2.35	2.71	2.17	3.66	3.72	3.89	3.44	3.98	4.22	4.04	3.86	3.92	
150	4.92	3.42	3.96	3.13	3.20	3.24	3.01	3.71	3.61	3.95	3.91	4.09	4.27	4.04	4.54	3.82	
155	3.93	3.79	4.59	3.77	3.74	3.35	3.64	4.02	3.25	3.79	3.80	4.03	4.00	3.93	3.96	3.66	
160	3.72	3.79	4.64	3.82	3.90	3.55	4.01	4.13	3.20	3.42	3.80	4.14	3.74	3.82	3.96	3.71	
165	3.77	4.00	4.64	3.82	3.90	3.82	4.01	4.08	3.82	3.47	3.91	4.25	3.74	3.98	3.96	3.92	
170	4.14	4.58	5.38	4.56	4.64	4.57	4.91	4.08	4.35	4.26	4.96	5.58	5.29	5.21	5.02	5.46	
175	4.35	4.73	5.65	4.93	5.55	4.94	5.44	4.50	4.40	4.26	5.01	5.68	5.34	5.63	4.97	5.40	
180	3.93	4.89	5.44	5.04	5.71	5.15	5.44	4.08	3.93	4.05	4.75	5.36	5.02	5.42	4.91	5.30	

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2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-08-27	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LWP2-80W		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE160886-	120.0	60	0.6551	77.86	0.9905	8.15
G2	277.0	60	0.3185	79.51	0.9012	11.84
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

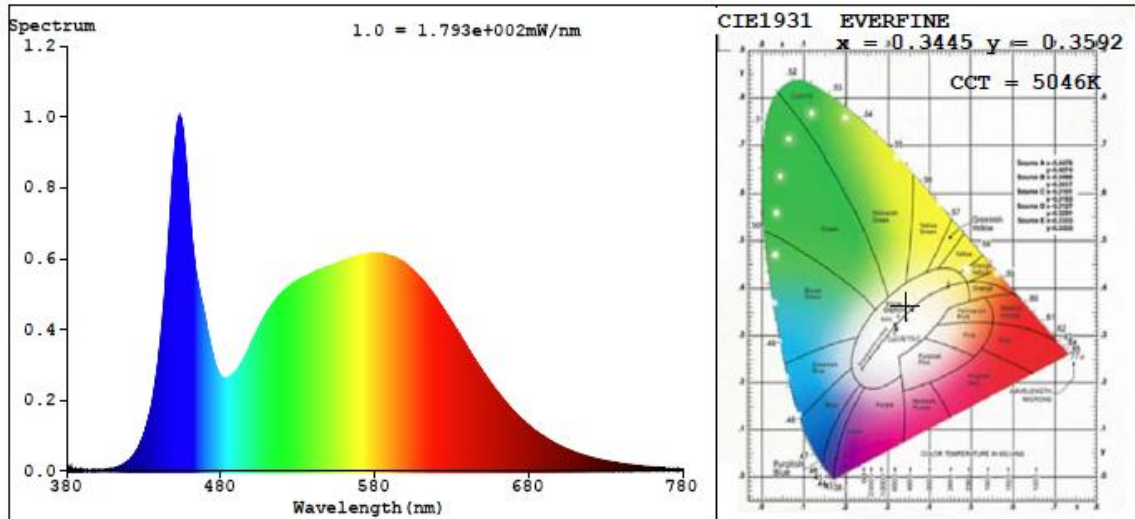
Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	80	R9	5
Frequency (Hz)	60	R2	89	R10	72
CCT (K)	5046	R3	94	R11	80
Duv	0.0040	R4	81	R12	59
Chromaticity (x, y)	x=0.3445 y=0.3592	R5	81	R13	83
Chromaticity (u', v')	u'=0.2081 v'=0.4882	R6	84	R14	97
Color Rendering Index (CRI)	82.6	R7	87	R15	75
R9	5	R8	66	--	--

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)	9128	9032	5000-10000 (±10%)	
Luminous Efficacy (lm/W)	117.24	113.60	Standard: >= 95(-3%)	Premium: >= 115(-3%)

Spectral Power Distribution & Chromaticity Diagram



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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%			

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