

## LM-79-08 Test Report

For

# Revolution Lighting Technologies, Inc

(Brand Name:  Revolution Lighting )

2280 Ward Ave. Simi Valley, CA. 93065

## Outdoor Pole/Arm-Mounted Area and Roadway Luminaires

Model name(s): 113XS5-3LT

Remark: 113 represents Area Light Type, X represents Standard Housing Color.  
S represents Sensor Options, can be 1=N/A;2=photocell& motion sensor. 5 represents  
300W(AC100-277V). L represents Lens Type, can be 3=TYPEIII,5=TYPEV. T  
represents CCT, can be 2=4000K,4=5000K

Representative (Tested) Model: 113025-332 [113015-332]  
113025-334 [113015-334]

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

Test &amp; Report By:

*Jack Luo*

Engineer: Jack Luo

Date: Aug.11,2017

Update: Nov.13,2017(Updating model numbers)

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

Review By:

*Tommy Liang*

Manager: Tommy Liang

Laboratory: Standard-Tech Co. Ltd Testing Center  
NVLAP CODE: 201011-0

Report Format Number STD/QR4909-A/2


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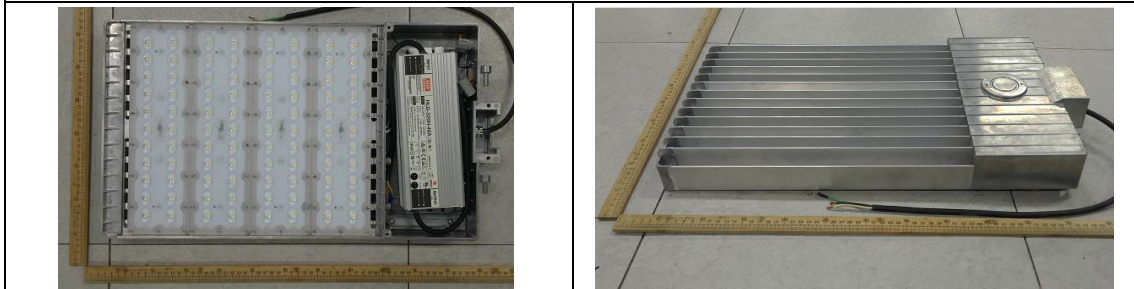
Fax: 8620-32290422

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

**1.1 Product Information:**

Organization Name	Revolution Lighting Technologies, Inc	
Brand Name		
Model Number	113XS5-3LT	
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	
Rated Voltage / Frequency	100-277 Vac, 50/60 Hz	
Nominal Power	300W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K,5000K	
LED Manufacturer	Lumileds	
LED Model	L130-3080003000W2C	
Sample Number	GZE1708002-E1(4000K),E2(5000K)	
Lamp Length	--	mm
Lamp Width	--	mm
Number of Units (modular products)	N/A	s

**Photo**



**1.2 Test Specifications:**

Date of Receipt	Aug.04,2017
Date of Test	Aug.05,2017
Test item	<ol style="list-style-type: none"> <li>1. Total Luminous Flux</li> <li>2. Luminous Distribution Intensity</li> <li>3. Luminous Efficacy</li> <li>4. Correlated Color Temperature</li> <li>5. Color Rendering Index</li> <li>6. Chromaticity Coordinate</li> <li>7. Electrical Parameters</li> </ol>
Reference Standard	<ol style="list-style-type: none"> <li>1. IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products</li> <li>2. ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products</li> <li>3. CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources</li> <li>4. CIE 15-2004 Technical Report Colorimetry</li> <li>5. IESNA LM-16-93 Practical Guide to Colorimetry of Light Source</li> <li>6. IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems</li> </ol>
Reference Work Instruction	QD25

**1.3 Test Methods**

<p><b>1) Photometric and Light Distribution Measurement – Goniophotometer Method:</b>                  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.</p>
<p><b>2) Chromaticity Measurement – Sphere-Spectroradiometer Method:</b>                  Chromaticity parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25 °C ± 1 °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><b>3) Electrical Measurements:</b>                  Electrical parameters were measured using power meters incorporated in goniophotometer or sphere-spectroradiometer system. The ambient temperature surrounding the sample was maintained at 25 °C ± 1 °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)*

<b>Test date</b>	2017-08-05	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	Horizontal	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	113025-332 [113015-332]		

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE170800	120.0	60	2.496	298.6	0.9968	4.78
2-E1	277.0	60	1.128	297.3	0.9512	8.04
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

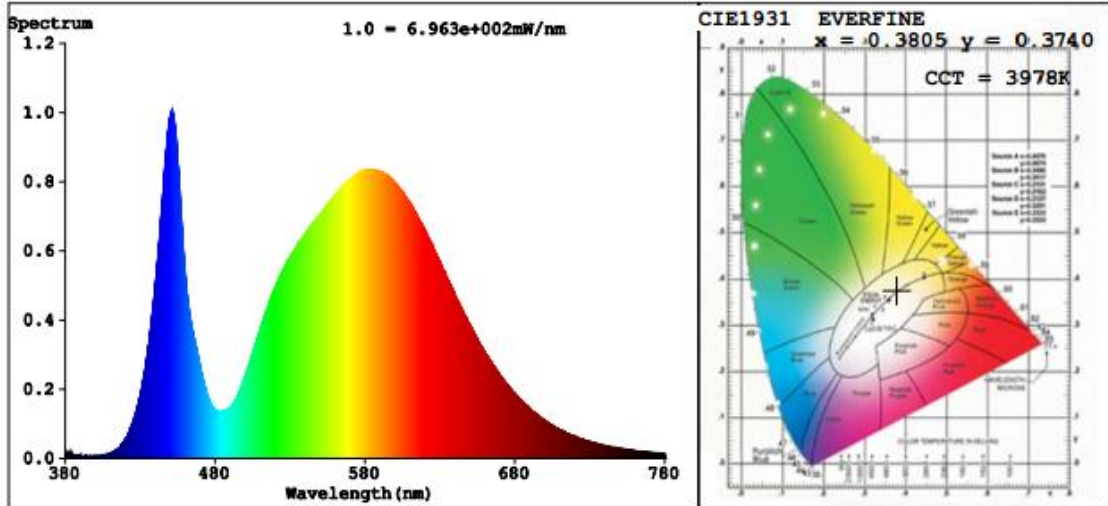
**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	72	R9	0
Frequency (Hz)	60	R2	81	R10	55
CCT (K)	3978	R3	87	R11	68
Duv	-0.0013	R4	73	R12	45
Chromaticity (x, y)	x=0.3805 y=0.3740	R5	72	R13	74
Chromaticity (u', v')	u'=0.2263 v'=0.5003	R6	73	R14	93
Color Rendering Index (CRI)	74.7	R7	83	R15	68
R9	0	R8	57	--	--

**Photometric Measurement –Goniophotometer Method:**

Parameter	Result		DLC V4.2 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	36566	36826	≥1000 (-10%)	
Luminous Efficacy (lm/W)	122.46	123.87	Standard: ≥100(-3%)	Premium: ≥120(-3%)
Most Worst Luminous/Highest Watts	122.46			
Zonal lumens in the 0-90 °zone (%)	99.7	--	≥ 100(-1)	
Zonal lumens in the 80-90 °zone (%)	2.0	--	≤ 10(+3)	
Beam Angle (°)	135.8	--	--	
Center Beam Candle Power (cd)	8611	--	--	

**Spectral Power Distribution & Chromaticity Diagram**

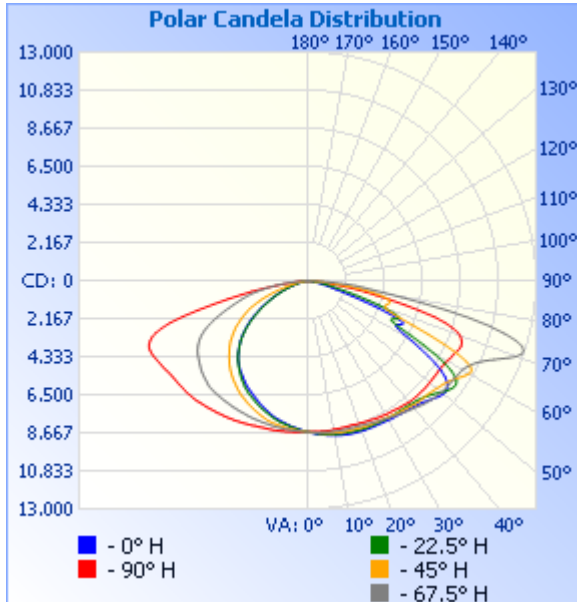


**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	7,140.2	19.5%
0-40	12,353.1	33.8%
0-60	25,611.5	70%
60-90	10,855.4	29.7%
70-100	4,699.5	12.9%
90-120	40.9	0.1%
0-90	36,466.9	99.7%
90-180	94.9	0.3%
0-180	36,561.8	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	821.0	2.2%	90-100	10.8	0%
10-20	2,421.0	6.6%	100-110	14.0	0%
20-30	3,898.1	10.7%	110-120	16.2	0%
30-40	5,212.9	14.3%	120-130	16.1	0%
40-50	6,308.3	17.3%	130-140	13.5	0%
50-60	6,950.1	19.0%	140-150	10.2	0%
60-70	6,166.6	16.9%	150-160	7.7	0%
70-80	3,942.9	10.8%	160-170	4.7	0%
80-90	745.9	2.0%	170-180	1.9	0%

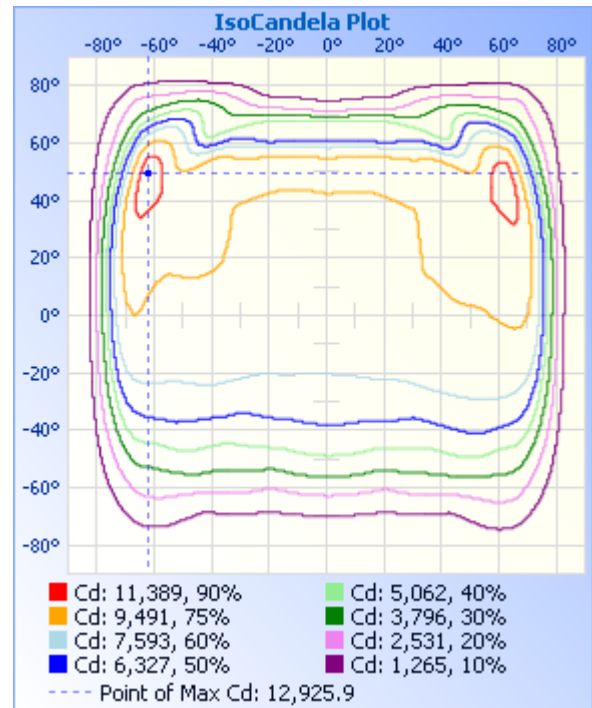
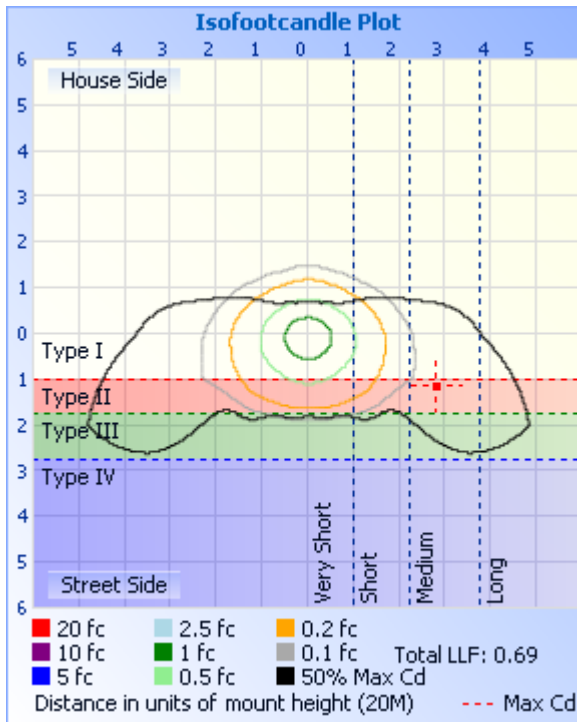
**Photometric Data**



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
20.0M	2.00 fc	48.3 M	117.8 M
40.0M	0.50 fc	96.5 M	235.5 M
60.0M	0.22 fc	144.8 M	353.3 M
80.0M	0.13 fc	193.0 M	471.0 M
100.0M	0.08 fc	241.3 M	588.8 M

■ Vert. Spread: 100.7°  
 ■ Horiz. Spread: 142.5°



**Laboratory: Standard-Tech Co. Ltd Testing Center**  
**NVLAP CODE: 201011-0**

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Table--1

UNIT: \*10cd

C (DEG) \ y (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	861	861	861	861	861	861	861	861	861	861	861	861	861	861	861	861	
5	865	873	873	877	878	875	870	867	861	851	847	842	840	843	852	857	
10	869	882	883	889	893	887	880	872	860	844	831	819	817	824	842	852	
15	874	888	889	897	904	895	885	874	860	838	813	794	791	799	830	848	
20	878	894	894	901	910	900	890	878	864	832	795	767	758	771	807	844	
25	890	902	898	903	911	902	894	890	872	824	770	734	723	739	782	839	
30	901	921	906	906	916	907	900	905	881	820	737	699	691	706	754	835	
35	911	943	921	911	924	908	914	924	890	815	702	658	652	662	718	830	
40	922	970	930	921	936	917	927	946	901	806	660	609	611	614	679	826	
45	933	998	945	946	966	938	939	972	904	789	610	550	555	554	631	813	
50	938	1012	958	1003	1005	989	957	991	905	753	554	476	485	481	579	791	
55	944	1022	998	1031	955	1031	992	1001	904	713	486	386	398	390	515	760	
60	962	1039	1054	814	681	836	1060	1016	916	666	415	287	299	291	439	718	
65	980	1123	787	526	589	523	858	1090	942	586	334	195	204	199	348	635	
70	943	1273	469	477	340	492	479	1262	925	465	220	119	118	120	228	501	
75	644	1066	478	192	122	207	484	1160	663	349	109	58.5	55.9	57.6	113	375	
80	256	506	299	73.7	50.2	79.9	363	546	277	213	44.6	34.1	31.6	33.1	43.9	231	
85	42.6	228	59.5	21.5	15.6	22.9	89.7	221	54.8	51.2	16.5	13.9	10.8	13.6	17.1	53.9	
90	1.87	2.28	1.09	0.44	0.29	0.40	1.15	2.36	1.82	1.64	0.69	0.29	0.22	0.36	0.95	1.94	
95	1.67	1.35	0.64	0.26	0.22	0.23	0.64	1.43	1.62	1.73	0.80	0.49	0.36	0.57	0.99	2.02	
100	1.91	1.20	0.59	0.28	0.28	0.28	0.65	1.37	1.81	1.92	1.09	0.78	0.65	0.87	1.29	2.13	
105	2.23	1.39	0.71	0.43	0.43	0.45	0.81	1.53	2.10	2.18	1.50	1.06	1.00	1.19	1.79	2.34	
110	2.45	1.66	0.87	0.65	0.70	0.68	1.03	1.77	2.24	2.26	1.70	1.46	1.47	1.49	1.94	2.54	
115	2.48	1.82	1.03	0.73	0.85	0.82	1.20	1.95	2.19	2.33	1.70	1.43	1.63	1.59	1.95	2.57	
120	2.48	1.84	1.22	0.98	0.86	0.95	1.38	1.99	2.08	2.34	1.82	1.62	1.67	1.66	2.01	2.35	
125	2.41	1.93	1.27	1.25	1.35	1.34	1.42	2.07	1.94	2.12	1.69	1.93	2.19	1.99	1.94	2.12	
130	2.26	1.84	1.27	1.38	1.43	1.46	1.45	1.96	1.95	1.78	1.62	2.10	2.23	2.12	1.99	1.94	
135	2.05	1.69	1.25	1.55	1.66	1.66	1.46	1.76	1.85	1.64	1.45	2.02	2.14	2.12	1.81	1.89	
140	1.97	1.66	1.17	1.60	1.67	1.71	1.35	1.70	1.80	1.71	1.28	1.97	1.93	1.91	1.49	1.99	
145	1.88	1.49	1.24	1.59	1.46	1.70	1.19	1.60	1.80	1.64	1.35	1.61	1.50	1.60	1.70	1.96	
150	1.77	1.50	1.52	1.62	1.55	1.74	1.46	1.62	1.84	1.65	1.58	1.66	1.66	1.57	2.14	1.87	
155	1.54	1.52	1.66	1.74	1.74	1.74	1.60	1.68	1.59	1.66	1.52	1.86	1.44	1.51	2.10	1.72	
160	1.55	1.52	1.65	1.72	1.74	1.73	1.58	1.69	1.50	1.60	1.45	1.76	1.43	1.44	1.91	1.78	
165	1.58	1.52	1.72	1.59	1.65	1.70	1.60	1.59	1.57	1.49	1.45	1.70	1.58	1.35	1.74	1.95	
170	1.75	1.75	1.89	1.81	1.63	1.86	1.94	1.71	1.81	1.78	1.83	1.86	2.16	1.98	2.12	2.33	
175	1.85	1.96	1.97	1.85	1.90	1.88	2.09	1.85	1.96	1.96	1.97	1.96	2.06	2.01	2.00	2.29	
180	1.73	1.86	1.78	1.76	1.84	1.72	2.05	1.78	1.75	1.76	1.87	1.77	1.76	1.83	1.74	2.04	

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**2.2 Electrical, Photometric and Chromaticity Measurements**  
*(Refer to Work Instruction QD25)*

<b>Test date</b>	2017-08-05	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	Horizontal	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	113025-334 [113015-334]		

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE170800	120.0	60	2.505	299.1	0.9951	5.14
2-E2	277.0	60	1.135	298.6	0.9496	8.77
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

**Chromaticity Measurement - Sphere-Spectroradiometer Method:**

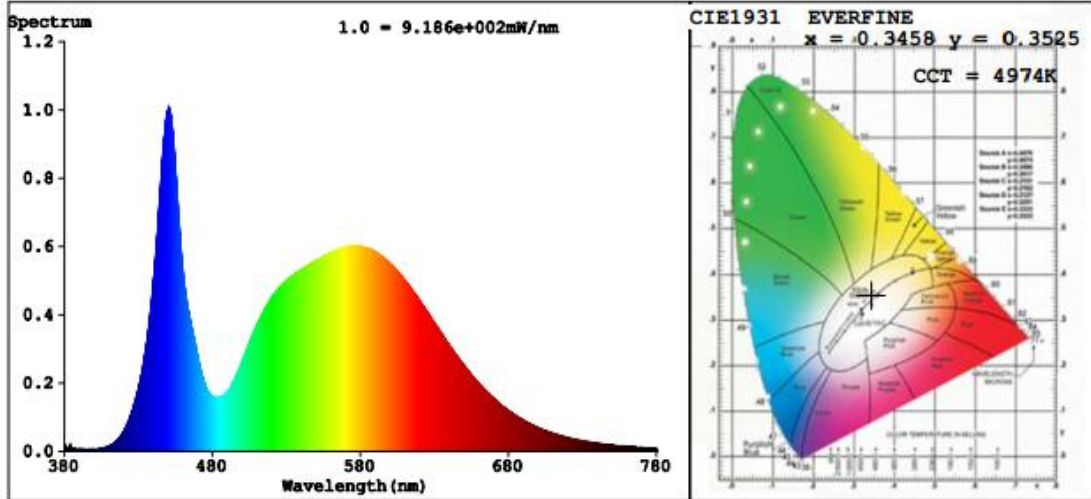
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	75	R9	0
Frequency (Hz)	60	R2	83	R10	57
CCT (K)	4974	R3	87	R11	74
Duv	0.0001	R4	77	R12	47
Chromaticity (x, y)	x=0.3458 y=0.3525	R5	75	R13	77
Chromaticity (u', v')	u'=0.2116 v'=0.4852	R6	75	R14	93
Color Rendering Index (CRI)	77.4	R7	85	R15	71
R9	0	R8	63	--	--

**Photometric Measurement –Sphere-Spectroradiometer Method:**

Parameter	Result		DLC V4.2 Pass Criteria	
Test Voltage (V)	120.0	277.0	--	
Frequency (Hz)	60	60		
Total Luminous (lm)	37382	37543	≥1000 (-10%)	
Luminous Efficacy (lm/W)	124.98	125.73	Standard: ≥	Premium: ≥
Most Worst Luminous/Highest Watts	124.98		100(-3%)	120(-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-331	2 meter Integrating Sphere	2017-07-01	2018-06-30
ST-R-327	Spectral analysis system HAAS-2000	2017-07-01	2018-06-30
D204	Standard Lamp	2017-07-12	2018-07-11
PF2010	Power Meter for Integrating Sphere	2017-07-01	2018-06-30
GO-R5000	Goniophotometer system	2017-07-01	2018-06-30
D908S	Standard Lamp	2017-07-12	2018-07-11
PF210	Power Meter for Goniophotometer	2017-07-07	2018-07-06

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 \*\*\*\*\***