

## **LM-79-08 Test Report**

### **Outdoor Non-Cutoff and Semi-Cutoff Wall-mounted Area Luminaires**

Model name(s): WML-80W

Representative (Tested) Model: WML-80NW  
WML-80CW

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

Test & Report By:

*Johnson Sun*

Engineer: Johnson Sun

Update: Nov.03, 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

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**1.1 Product Information:**

Organization Name	WESTGATE MFG.	
Brand Name		
Model Number		
SKU (if available)	N/A Type of Luminaire (for	
integral lamps, Outdoor Non-Cutoff and Semi	-Cutoff Wall-mounted Area	
list base type and lamp type)	Luminaires	
Rated Voltage / Frequency	100 -277Vac, 50/60 Hz	
Nominal Power	80W	
Rated Initial Lamp Lumen	--	
Declared CCT	4000K,5000K	
LED Manufacturer	Philips Lumileds	
LED Model	L130-2780003000W21	
Sample Number	GZE161105-U1(4000K),U2(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	: Oct.31,2016
Date of Test	: Nov.01,2016
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></p> <p>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></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 °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></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 °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>	2016-11-01	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	WML-80NW		

**Electrical Measurement :**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-	120.0	60	0.6544	78.18	0.9955	10.83
U1	277.0	60	0.2970	78.05	0.9488	14.91
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

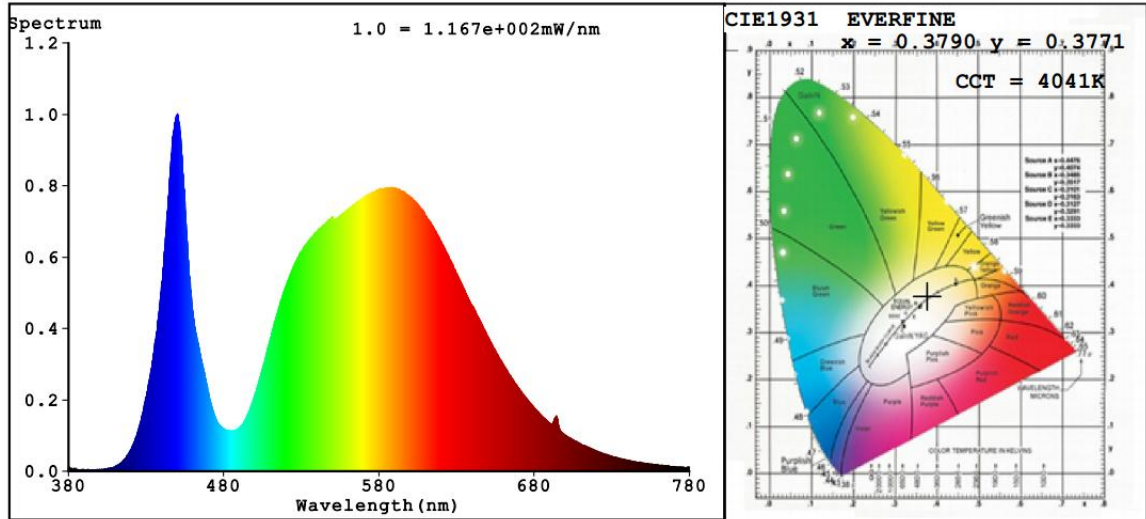
**Chromaticity Measurement - Sphere-Spectroradiometer Method :**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	73	R9	0
Frequency (Hz)	60	R2	80	R10	51
CCT (K)	4041	R3	84	R11	70
Duv	0.0006	R4	75	R12	43
Chromaticity (x, y)	x=0.3790 y=0.3771	R5	72	R13	74
Chromaticity (u', v')	u'=0.2240 v'=0.5015	R6	71	R14	91
Color Rendering Index (CRI)	74.8	R7	83	R15	68
R9	0	R8	59	--	--

**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)	9802.9	9769.5		
Luminous Efficacy (lm/W)	125.39	125.17		
Total Luminous (lm)(0-90 °)	7756.1	7731.1	>=300 (-10%)	
Luminous Efficacy (lm/W)(0-90 °)	99.21	99.05	Standard: >= 95(-3%)	Premium: >= 115(-3%)
Zonal lumens in the (80-90 °)/(0-90 °) zone (%)	12.83	--	<=10(3)	
Beam Angle ( °)	97.1	--	--	
Center Beam Candle Power (cd)	1776	--	--	

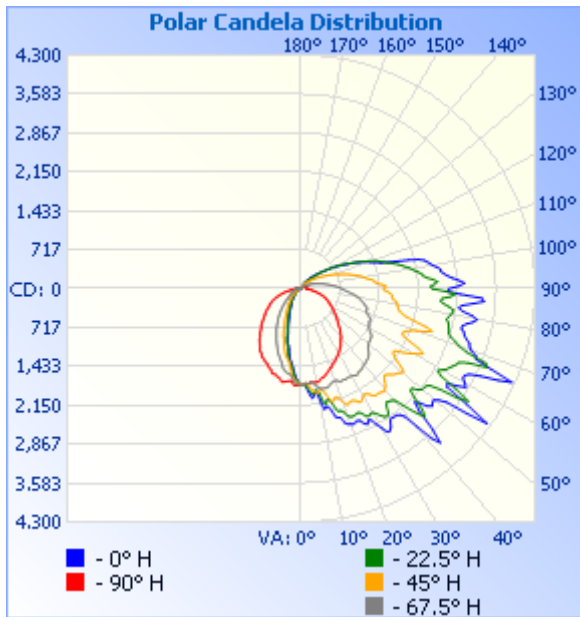
**Spectral Power Distribution & Chromaticity Diagram**



**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,328.6	13.6%
0-40	2,229.0	22.7%
0-60	4,428.2	45.2%
60-90	3,327.9	33.9%
70-100	2,933.8	29.9%
90-120	1,748.9	17.8%
0-90	7,756.1	79.1%
90-180	2,047.9	20.9%
0-180	9,803.9	100%

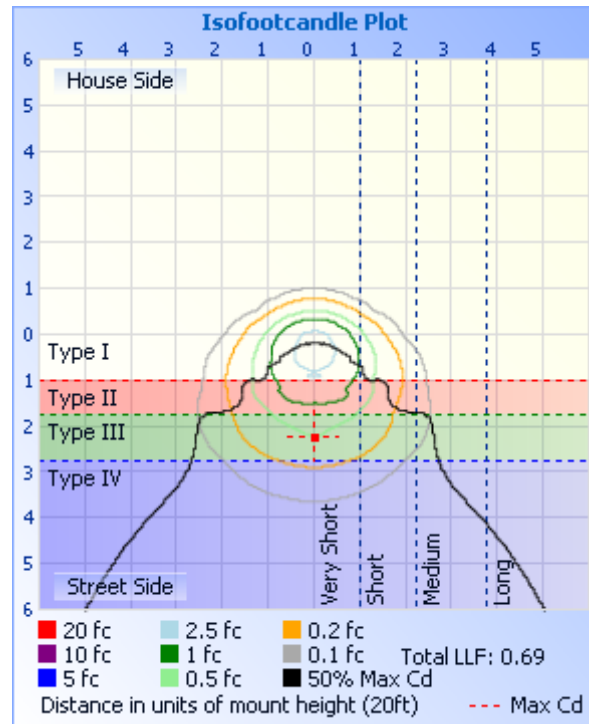
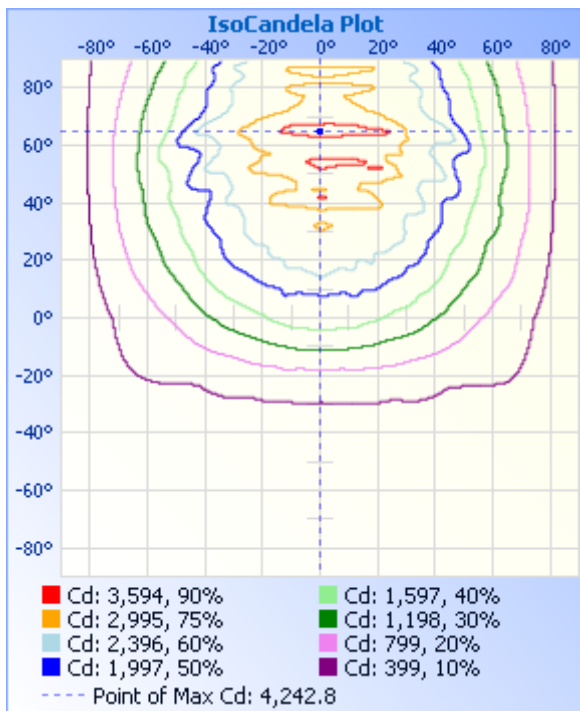
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	162.8	1.7%	90-100	823.5	8.4%
10-20	461.7	4.7%	100-110	582.3	5.9%
20-30	704.1	7.2%	110-120	343.2	3.5%
30-40	900.4	9.2%	120-130	176.5	1.8%
40-50	1,049.5	10.7%	130-140	78.7	0.8%
50-60	1,149.8	11.7%	140-150	31.4	0.3%
60-70	1,217.6	12.4%	150-160	9.9	0.1%
70-80	1,115.3	11.4%	160-170	1.9	0%
80-90	995.0	10.1%	170-180	0.4	0%



**Illuminance at a Distance**

	Center Beam fc	Beam Width	
17.0ft	<b>6.15 fc</b>	<b>38.6 ft</b>	<b>38.5 ft</b>
34.0ft	<b>1.54 fc</b>	<b>77.2 ft</b>	<b>77.1 ft</b>
51.0ft	<b>0.68 fc</b>	<b>115.8 ft</b>	<b>115.6 ft</b>
68.0ft	<b>0.38 fc</b>	<b>154.3 ft</b>	<b>154.1 ft</b>
85.0ft	<b>0.25 fc</b>	<b>192.9 ft</b>	<b>192.7 ft</b>
102.0ft	<b>0.17 fc</b>	<b>231.5 ft</b>	<b>231.2 ft</b>

■ Vert. Spread: 97.2°  
■ Horiz. Spread: 97.2°



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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	1776	1776	1776	1776	1776	1776	1776	1776	1776	1776	1776	1776	1776	1776	1776	1776
5	1752	1773	1866	1946	1982	1893	1831	1755	1757	1699	1614	1542	1518	1566	1651	1693
10	1738	1850	1849	2019	2149	1972	1912	1854	1746	1571	1361	1277	1239	1308	1341	1561
15	1679	1887	2157	2217	2442	2180	2153	1888	1668	1391	1157	1009	954	1011	1170	1395
20	1605	1865	2324	2473	2656	2488	2204	1811	1555	1213	941	734	681	735	945	1249
25	1507	1885	2341	2513	2737	2520	2273	1845	1474	1033	695	548	496	548	723	1069
30	1443	1923	2354	2690	2967	2635	2290	1859	1375	862	542	416	378	424	560	909
35	1318	1836	2459	2874	2904	2797	2400	1859	1268	702	418	321	306	329	436	755
40	1183	1850	2523	2892	3319	2692	2402	1814	1140	565	330	251	234	263	342	620
45	1038	1780	2340	3350	2957	3157	2235	1754	990	452	258	191	182	201	270	491
50	921	1638	2611	3046	3184	2900	2412	1610	857	358	203	144	135	149	211	380
55	806	1629	2273	3856	3726	3514	2067	1571	746	287	155	107	91.9	112	165	288
60	696	1463	2725	3029	3477	2992	2381	1433	639	239	116	65.2	50.4	69.2	130	226
65	609	1449	2261	3379	3993	3210	2084	1394	548	200	87.3	45.8	34.1	50.1	99.4	186
70	499	1296	2540	3196	3330	3093	2266	1278	457	165	65.6	27.6	18.7	29.8	74.5	157
75	372	1270	2139	2925	3102	2810	2010	1228	342	137	43.6	6.12	6.43	6.11	47.2	131
80	251	1115	2012	2926	3287	2784	1796	1098	236	115	26.4	6.66	7.32	6.20	29.5	112
85	151	962	1884	2673	3166	2574	1678	912	159	96.5	22.4	7.75	8.56	7.14	23.9	95.4
90	102	803	1729	2533	2718	2417	1516	747	118	84.3	18.9	7.99	9.25	7.56	20.7	84.7
95	85.4	645	1538	2443	2704	2322	1365	603	98.5	73.5	16.2	8.23	9.25	7.64	17.7	72.8
100	75.9	507	1323	2209	2461	2071	1185	469	86.7	62.4	13.3	7.92	9.23	7.56	14.6	60.1
105	71.1	373	1105	1900	2049	1779	982	353	74.4	50.8	11.1	7.89	9.14	7.48	12.3	49.2
110	66.4	272	890	1614	1421	1490	773	263	66.9	40.3	8.96	7.44	8.95	7.43	10.6	38.7
115	60.9	206	684	1253	1150	1158	598	197	61.7	30.8	7.79	7.25	8.66	6.94	8.96	29.1
120	51.3	157	509	964	869	892	449	145	52.8	23.3	6.90	6.80	8.01	6.70	7.63	22.5
125	39.4	117	378	703	648	654	338	105	41.6	17.7	6.02	5.97	7.46	5.91	6.51	17.9
130	29.6	84.6	281	489	466	452	254	72.7	31.2	13.5	5.19	5.57	6.43	5.74	5.67	14.2
135	22.3	62.8	206	334	338	303	186	53.9	22.8	10.3	4.85	5.53	6.37	5.68	5.09	11.4
140	16.8	46.1	149	231	244	210	134	39.4	16.5	8.05	4.75	5.59	6.23	5.79	5.04	8.88
145	12.5	30.7	101	149	170	137	90.1	24.9	12.0	6.58	4.66	5.66	6.10	5.93	5.14	6.84
150	9.11	17.1	65.3	93.2	114	91.7	58.5	12.6	8.42	5.76	4.57	5.37	5.89	5.66	5.09	5.37
155	6.63	7.90	37.8	60.2	73.2	60.6	34.4	7.13	5.54	4.24	4.16	4.39	5.09	5.12	4.55	4.24
160	4.35	4.65	16.1	33.4	44.1	34.4	14.0	4.55	3.60	3.51	3.97	4.09	4.35	4.53	4.39	4.22
165	4.11	3.22	3.14	11.4	15.8	11.3	2.99	3.59	3.51	3.61	3.92	4.10	4.40	4.33	4.41	4.15
170	4.33	3.90	3.67	3.99	2.97	3.20	3.52	4.00	4.59	4.33	5.28	5.82	5.19	4.78	5.29	5.00
175	4.68	4.63	4.45	3.99	3.51	3.79	4.40	4.59	4.65	4.62	5.44	5.62	5.39	4.97	4.99	5.32
180	4.72	4.83	4.90	4.44	4.11	4.23	4.50	4.79	4.58	4.78	4.85	5.08	4.35	3.93	4.21	4.49

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**BUG Rating: B1-U4-G5**

**IESNA Luminaire Flux Distribution Table:**

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	895.72	9.1
FM - Front-Medium(30-60)	2666	27.2
FH - Front-High(60-80)	2206.1	22.5
FVH - Front-Very High(80-90)	965.42	9.8
<b>Total Forward Light</b>	<b>8721</b>	<b>89.0</b>

BL - Back-Low(0-30)	432.92	4.4
BM - Back-Medium(30-60)	434	4.4
BH - Back-High(60-80)	126.26	1.3
BVH - Back-Very High(80-90)	29.302	0.3
<b>Total Back Light</b>	<b>1081.9</b>	<b>11.0</b>

UL - Uplight-Low(90-100)	823.23	8.4
UH - Uplight-High(100-180)	1224	12.5
<b>Total Up Light</b>	<b>2047.2</b>	<b>20.9</b>

<b>BUG(Back,Up,Glare) Rating</b>	<b>B1-U4-G5</b>
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Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	1022.5	59.436	1081.9
Street Side	6733.2	1987.8	8721



**2.2 Electrical, Photometric and Chromaticity Measurements**

(Refer to Work Instruction QD25)

<b>Test date</b>	2016-11-01	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	WML-80CW		

**Electrical Measurement :**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE161105-	120.0	60	0.6539	78.02	0.9943	10.85
U2	277.0	60	0.2966	77.89	0.9481	14.94
<b>DLC Pass Criteria</b>					>= 0.9(-3%)	<= 20(+5)

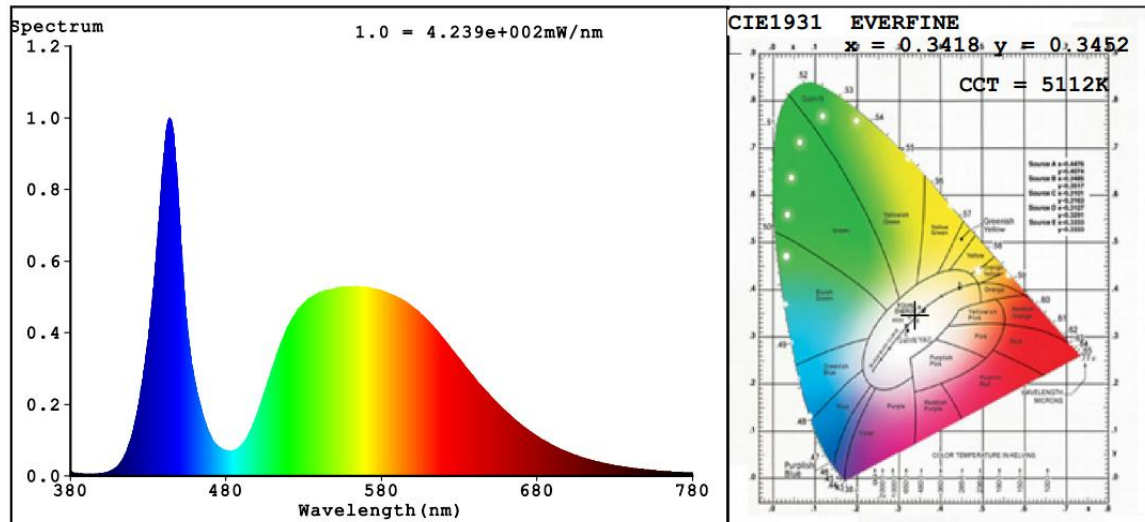
**Chromaticity Measurement - Sphere-Spectroradiometer Method :**

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	73	R9	0
Frequency (Hz)	60	R2	75	R10	39
CCT (K)	5112	R3	74	R11	74
Duv	-0.0019	R4	74	R12	45
Chromaticity (x, y)	x=0.3418 y=0.3452	R5	73	R13	72
Chromaticity (u', v')	u'=0.2117 v'=0.4810	R6	6	R14	85
Color Rendering Index (CRI)	72.0	R7	77	R15	69
R9	0	R8	63	--	--

**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)	9953	9919		
Luminous Efficacy (lm/W)	127.57	127.35		
Total Luminous (lm)(0-90 °)	7875	7849	>=300 (-10%)	
Luminous Efficacy(lm/W)(0-90 °)	100.94	100.77	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%			

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

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