

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

Outdoor Non-Cutoff and Semi-Cutoff Wall-Mounted Area Luminaires

Model name(s): LWP2-50

Representative (Tested) Model: LWP2-50(2700K)
LWP2-50(5700K)

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

Test & Report By:

Charman Chen

Engineer: Charman Chen

Date: Dec.21,2016

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

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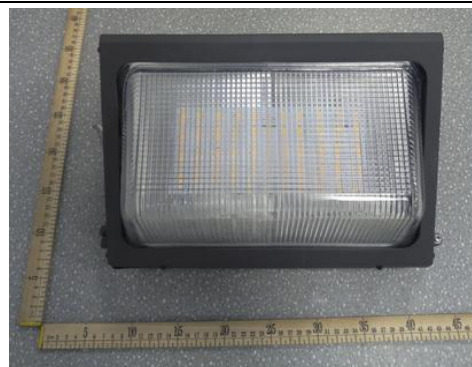
Fax: 8620-32290422

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

1.1 Product Information:

Organization Name	CEA GROUP INTERNATIONAL CO.,LTD	
Brand Name	CEA EAEC	
Model Number	LWP2-50	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Outdoor Non-Cutoff and Semi-Cutoff Wall-Mounted Area Luminaires	
Rated Voltage / Frequency	100 -277Vac, 50/60 Hz	
Nominal Power	50W	
Rated Initial Lamp Lumen	--	
Declared CCT	2700K,3000K,3500K,4000K,4500K,5000K,5700K	
LED Manufacturer	Zhongshan Dongguan Star Photoelectric Technology Co.,Ltd.	
LED Model	5730	
Sample Number	STD161215NB-B1(2700K), B2(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	Dec.18,2016
Date of Test	Dec.19,2016
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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, 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 277 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 277 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 277 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	2016-12-19	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LWP2-50(2700K)		

Electrical Measurement :

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD161215	120.0	60	0.3979	46.80	0.9801	10.11
NB-B1	277.0	60	0.1818	45.94	0.9123	13.70
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0V	R1	79	R9	0
Frequency (Hz)	60	R2	92	R10	82
CCT (K)	2741	R3	93	R11	75
Duv	-0.0001	R4	76	R12	72
Chromaticity (x, y)	x=0.4564 y=0.4095	R5	79	R13	82
Chromaticity (u', v')	u'=0.2608 v'=0.5264	R6	91	R14	97
Color Rendering Index (CRI)	80.1	R7	79	R15	70
R9	0	R8	52	--	--

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)	5864.0	5716.8	>=5000-10000 (±10%)	
Luminous Efficacy (lm/W)	125.30	124.44	--	
Total Luminous (lm)(0 °-90 °zone)	4682.8	4564.2	--	
Luminous Efficacy (lm/W) (0 °-90 ° zone)	100.06	99.35	Standard: >= 95(-3%)	Premium: >= 115(-3%)
Zonal lumens in the 80-90 °zone (%) (0-90 °zone)	12.60	--	<=10(+3)	
Beam Angle (°)	99.6	--	--	
Center Beam Candle Power (cd)	1025	--	--	

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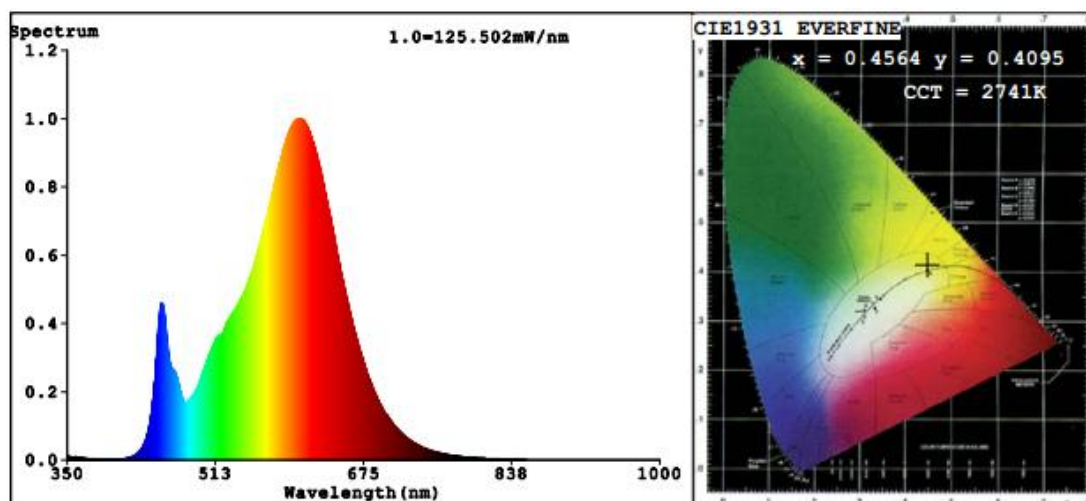
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Spectral Power Distribution & Chromaticity Diagram

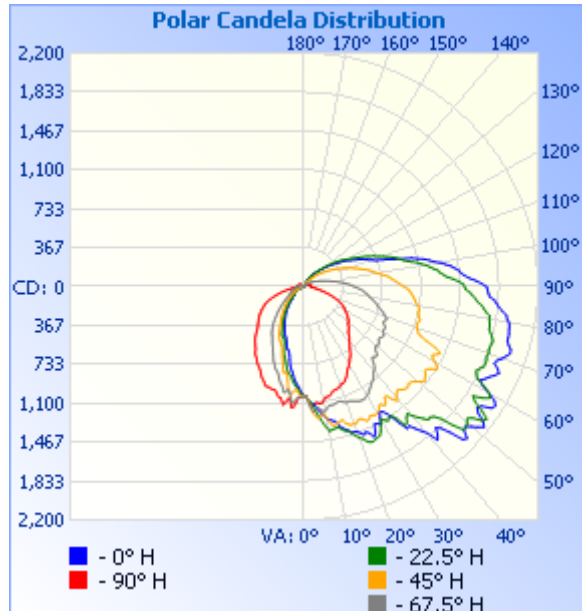


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	494.6	14.4%
0-40	817.0	23.9%
0-60	1,613.0	47.1%
60-90	1,140.9	33.3%
70-100	998.6	29.2%
90-120	564.7	16.5%
0-90	2,753.9	80.4%
90-180	670.6	19.6%
0-180	3,424.5	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	61.1	1.8%	90-100	271.3	7.9%
10-20	172.8	5.0%	100-110	182.5	5.3%
20-30	260.6	7.6%	110-120	111.0	3.2%
30-40	322.4	9.4%	120-130	61.0	1.8%
40-50	376.9	11.0%	130-140	29.3	0.9%
50-60	419.1	12.2%	140-150	12.5	0.4%
60-70	413.6	12.1%	150-160	2.9	0.1%
70-80	383.6	11.2%	160-170	0.2	0%
80-90	343.7	10.0%	170-180	0.1	0%

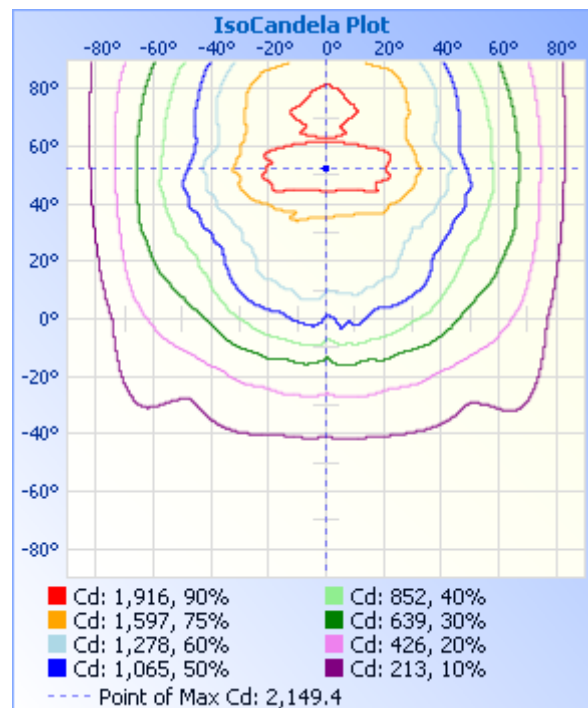
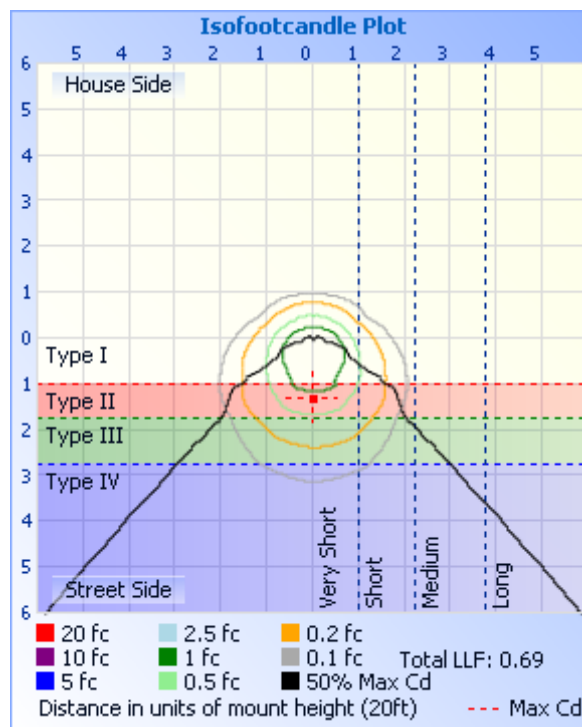
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width
17.0ft	3.55 fc	42.7 ft 38.6 ft
34.0ft	0.89 fc	85.4 ft 77.1 ft
51.0ft	0.39 fc	128.1 ft 115.7 ft
68.0ft	0.22 fc	170.8 ft 154.2 ft
85.0ft	0.14 fc	213.5 ft 192.8 ft
102.0ft	0.10 fc	256.2 ft 231.4 ft

■ Vert. Spread: 102.9°
■ Horiz. Spread: 97.2°



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Table--1

UNIT: cd

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	1025	1025	1025	1025	1025	1025	1025	1025	1025	1025	1025	1025	1025	1025	1025	1025	
5	1139	1165	1148	1132	1117	1165	1219	1181	1112	1090	1039	956	905	937	979	1088	
10	1130	1189	1222	1278	1269	1384	1266	1182	1081	986	892	851	755	831	892	1013	
15	1024	1147	1343	1449	1376	1399	1312	1141	1026	883	749	655	610	694	772	903	
20	1002	1114	1422	1462	1455	1512	1374	1163	993	794	614	564	505	540	606	805	
25	943	1167	1368	1567	1562	1587	1397	1188	939	678	543	483	434	495	546	691	
30	861	1181	1366	1479	1429	1446	1376	1184	845	592	452	393	359	401	460	598	
35	795	1164	1322	1449	1574	1519	1339	1107	757	504	377	316	294	325	381	527	
40	717	1064	1340	1639	1803	1591	1351	1027	664	420	307	245	222	253	309	450	
45	644	986	1365	1752	1941	1733	1357	937	590	340	247	179	157	183	249	360	
50	569	935	1399	1904	2053	2003	1393	881	541	254	200	131	126	134	195	281	
55	521	878	1420	1986	1987	2045	1387	857	501	194	149	103	109	105	146	212	
60	465	860	1395	1989	2010	2015	1420	856	448	162	109	85.6	80.9	85.8	108	166	
65	411	828	1354	1779	1977	1824	1365	824	388	139	86.8	58.7	57.5	59.8	83.5	139	
70	336	800	1135	1791	1981	1848	1130	809	300	121	64.4	30.4	25.1	32.1	63.6	119	
75	239	733	1120	1829	1980	1829	1119	717	205	102	35.6	1.40	1.60	1.41	38.2	102	
80	152	647	1082	1760	1957	1767	1095	641	128	82.4	18.5	1.82	1.99	1.64	19.4	83.7	
85	94.0	559	1025	1653	1818	1636	1029	567	85.8	65.6	13.9	2.07	2.36	1.89	14.8	67.0	
90	65.8	474	942	1512	1718	1510	942	473	64.7	57.2	10.4	2.32	2.67	2.26	11.2	58.3	
95	57.2	384	823	1334	1480	1315	829	380	59.4	50.3	7.84	2.35	2.78	2.37	8.46	50.9	
100	54.5	294	717	1159	1302	1169	711	288	58.1	43.4	5.84	2.35	2.78	2.40	6.18	44.8	
105	52.9	212	613	970	1045	965	616	211	56.5	33.5	4.49	2.35	2.75	2.34	4.71	37.4	
110	49.7	155	505	821	727	828	510	155	52.6	23.6	3.78	2.32	2.58	2.34	3.78	27.6	
115	44.6	118	418	666	613	677	417	118	47.5	16.0	3.10	2.29	2.47	2.29	3.07	18.7	
120	37.4	86.4	328	543	497	541	328	88.3	40.5	11.4	2.45	2.10	2.16	2.20	2.57	12.9	
125	27.0	61.4	253	443	399	436	252	63.7	29.2	7.84	1.83	1.96	2.05	2.00	2.12	8.52	
130	17.7	44.9	191	332	309	340	191	46.8	18.7	5.83	1.69	1.87	2.08	1.86	1.66	6.09	
135	11.3	29.8	137	236	233	245	137	32.0	12.6	4.09	1.58	1.76	1.74	1.69	1.44	4.01	
140	7.36	17.7	93.3	175	178	181	97.9	19.3	8.40	2.97	1.61	1.76	1.68	1.69	1.47	2.65	
145	4.83	8.53	62.9	118	135	124	68.4	8.72	5.30	2.30	1.67	1.76	1.68	1.67	1.55	1.69	
150	3.07	4.87	34.0	77.8	96.6	81.9	37.3	5.09	3.38	1.74	1.67	1.76	1.68	1.67	1.55	1.36	
155	1.86	2.56	13.1	34.5	51.5	36.8	14.6	2.66	2.11	1.49	1.69	1.76	1.68	1.64	1.55	1.47	
160	1.24	1.13	0.93	11.9	17.8	12.7	0.69	0.96	1.52	1.49	1.72	1.76	1.68	1.64	1.55	1.47	
165	1.30	0.95	0.79	0.76	0.76	0.68	0.56	0.71	1.52	1.49	1.72	1.76	1.68	1.64	1.58	1.41	
170	1.41	1.21	1.12	0.81	0.81	0.79	0.76	0.79	1.49	1.49	1.72	1.76	1.68	1.50	1.47	1.41	
175	1.49	1.49	1.44	1.20	1.04	1.04	1.04	1.16	1.49	1.49	1.72	1.76	1.62	1.50	1.47	1.33	
180	1.49	1.57	1.55	1.23	1.21	1.16	1.19	1.30	1.49	1.49	1.61	1.54	1.23	1.27	1.24	1.18	

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2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-12-19	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LWP2-50(5700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD161215	120.0	60	0.4001	47.63	0.9921	10.75
NB-B2	277.0	60	0.1827	46.82	0.9254	12.61
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

Chromaticity Measurement - Sphere-Spectroradiometer Method:

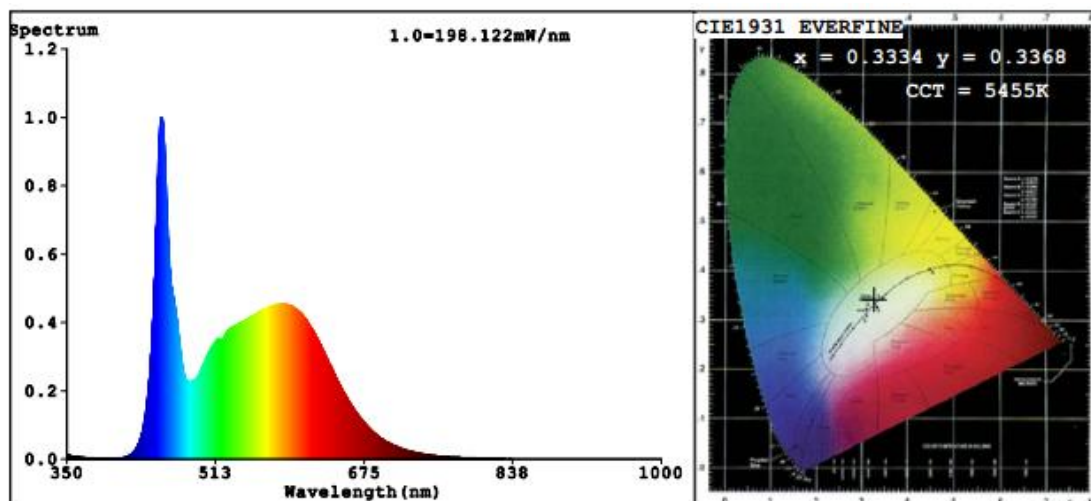
Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	87	R9	26
Frequency (Hz)	60	R2	94	R10	83
CCT (K)	5455	R3	95	R11	84
Duv	-0.0027	R4	85	R12	62
Chromaticity (x, y)	x=0.3334 y=0.3368	R5	86	R13	90
Chromaticity (u', v')	u'=0.2092 v'=0.4755	R6	88	R14	98
Color Rendering Index (CRI)	86.6	R7	87	R15	84
R9	26	R8	72	--	--

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)	6216.7	6061.3	5000-10000 (±10%)	
Luminous Efficacy (lm/W)	130.52	129.46	--	
Total Luminous (lm) (0 °-90 ° zone)	4998.2	4873.3	--	
Luminous Efficacy (lm/W) (0 °-90 ° zone)	104.9	104.09	Standard: >= 95(-3%)	Premium: >= 115(-3%)

* These values are calculated assuming ZLD of 0 °-90 ° zone is 80.4% (see “Zonal Lumen Tabulation” on page 5).

Spectral Power Distribution & Chromaticity Diagram



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2.3 Performance Assessment:

Model name	CCT(K)	Total Luminous (lm)	Power (W)	Luminous Efficacy (lm/W)
LWP2-50(2700K)	2700K	5864.0	46.80	125.3
LWP2-50(3000K)	3000K	5922.8	47.22	125.44
LWP2-50(3500K)	3500K	5981.6	47.22	126.69
LWP2-50(4000K)	4000K	6040.4	47.22	127.93
LWP2-50(4500K)	4500K	6099.1	47.22	129.18
LWP2-50(5000K)	5000K	6157.9	47.22	130.42
LWP2-50(5700K)	5700K	6216.7	47.63	130.52

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

$$5922.8 = (6216.7 - 5864.0) / 6 + 5864.0$$

$$5981.6 = (6216.7 - 5864.0) / 6 + 5922.8$$

$$6040.4 = (6216.7 - 5864.0) / 6 + 5981.6$$

$$6099.1 = (6216.7 - 5864.0) / 6 + 6040.4$$

$$6157.9 = (6216.7 - 5864.0) / 6 + 6099.1$$

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

$$74.22 = (46.80 + 47.63) / 2$$

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

$$125.44 = 5922.8 / 47.22$$

$$126.69 = 5981.6 / 47.22$$

$$127.93 = 6040.4 / 47.22$$

$$129.18 = 6099.1 / 47.22$$

$$130.42 = 6157.9 / 47.22$$

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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