



Report No.: STD160203NB-AC

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): SFL1-50

Representative (Tested) Model: SFL1-50(2700K)
SFL1-50(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.

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

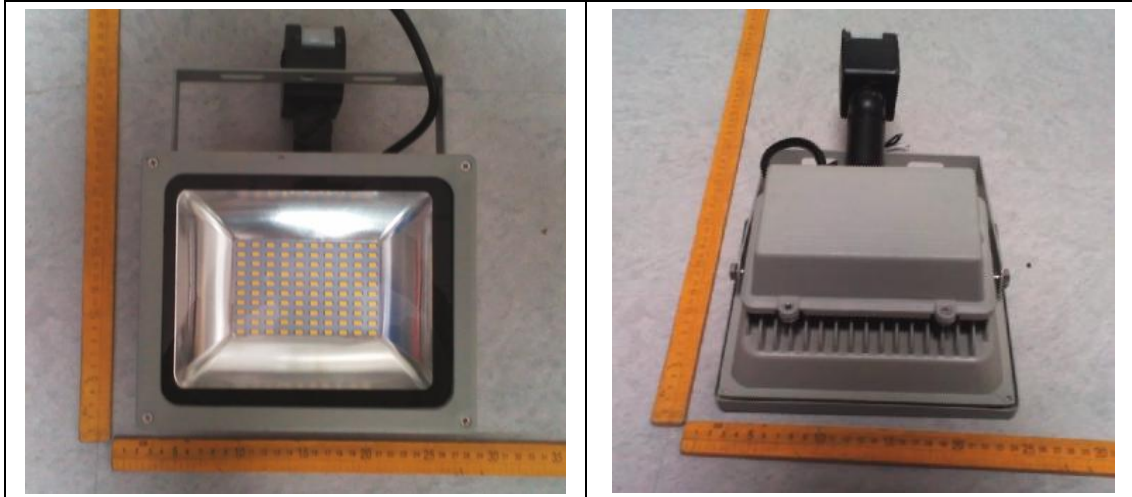
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<http://www.standard-tech.com>

1.1 Product Information:

Organization Name	CEA GROUP INTERNATIONAL CO.,LTD	
Brand Name	CEA/EAEC	
Model Number	SFL1-50	
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	50W	
Rated Initial Lamp Lumen	--	
Declared CCT	2700K,3000K,3500K,4000K,4500K,5000K, 5700K	
LED Manufacturer	Chuang Te LED	
LED Model	CT-5730	
Sample Number	STD160203NB-AC1(2700K),AC2(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	<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

1) Photometric and Light Distribution Measurement – Goniophotometer Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$, 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.

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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. 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.

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 $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. 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.

2.1 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-08-25	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	SFL1-50(2700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD160203	120.0	60	0.4116	48.70	0.9861	10.35
NB-AC1	277.0	60	0.1894	47.70	0.9094	13.76
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

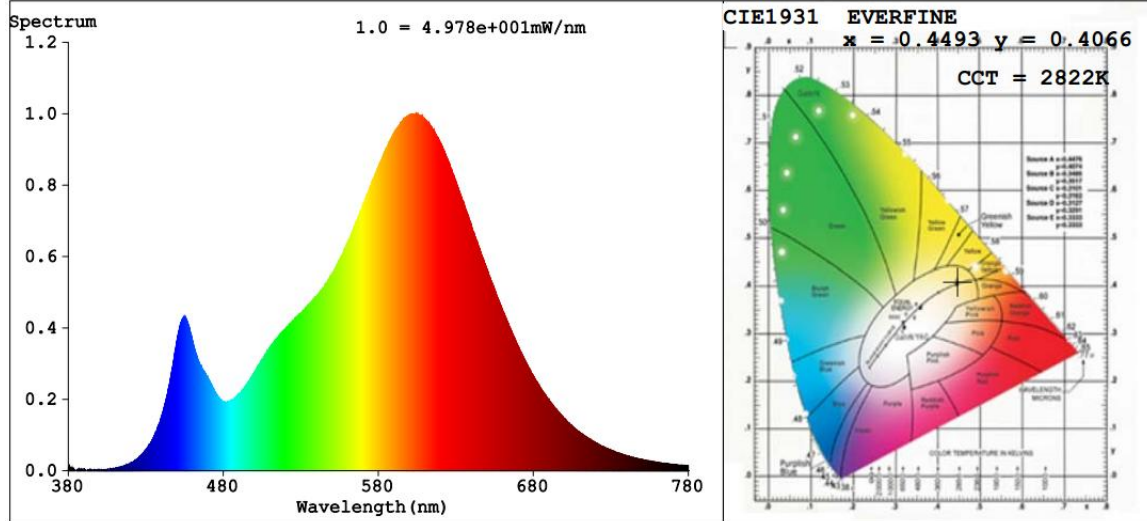
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	79	R9	0
Frequency (Hz)	60	R2	92	R10	81
CCT (K)	2822	R3	94	R11	76
Duv	-0.0005	R4	77	R12	73
Chromaticity (x, y)	x=0.4493 y=0.4066	R5	79	R13	82
Chromaticity (u', v')	u'=0.2575 v'=0.5242	R6	90	R14	97
Color Rendering Index (CRI)	80.5	R7	80	R15	71
R9	0	R8	54	--	--

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)	4424	4336.5	>=1000(-10%)	
Luminous Efficacy (lm/W)	90.84	90.91	Standard: >= 90(-3%)	Premium: >= 110(-3%)
Zonal lumens in the 0-90 °zone (%)	99.9	--	>= 85(-3)	
Beam Angle (°)	98.2	--	--	
Center Beam Candle Power (cd)	2029	--	--	

Spectral Power Distribution & Chromaticity Diagram

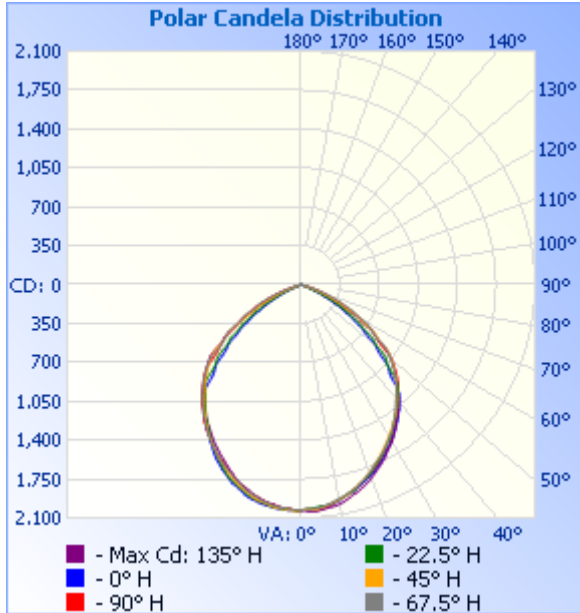


Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	1,523.4	34.4%
0-40	2,453.7	55.5%
0-60	4,063.8	91.9%
60-90	354.0	8%
70-100	49.6	1.1%
90-120	0.2	0%
0-90	4,417.8	99.9%
90-180	5.5	0.1%
0-180	4,423.3	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	191.3	4.3%	90-100	0.0	0%
10-20	538.7	12.2%	100-110	0.0	0%
20-30	793.4	17.9%	110-120	0.2	0%
30-40	930.3	21.0%	120-130	0.8	0%
40-50	921.6	20.8%	130-140	1.2	0%
50-60	688.4	15.6%	140-150	1.2	0%
60-70	304.4	6.9%	150-160	1.1	0%
70-80	45.2	1.0%	160-170	0.7	0%
80-90	4.4	0.1%	170-180	0.3	0%

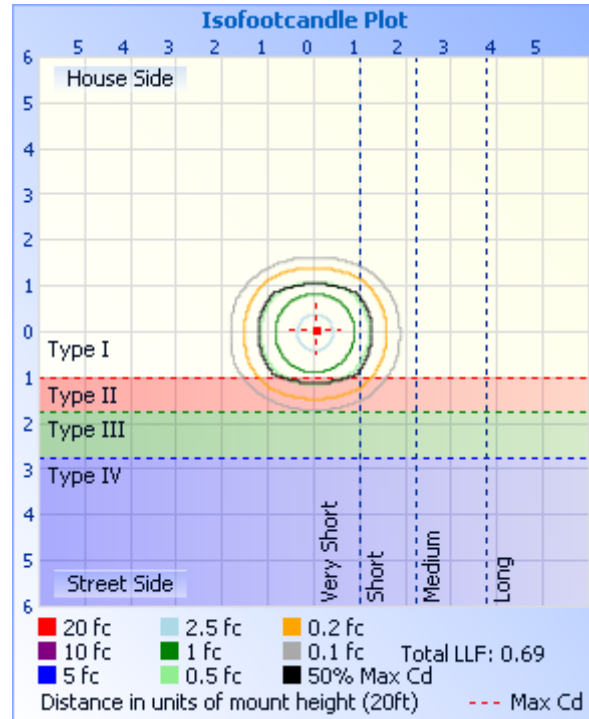
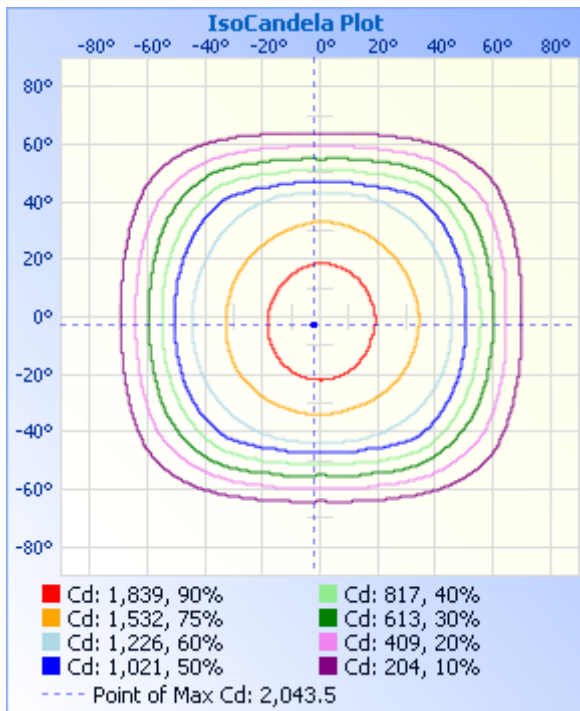
Photometric Data



Illuminance at a Distance

Height (ft)	Center Beam fc	Beam Width	Beam Width (ft)
17.0ft	7.02 fc	36.8 ft	41.4 ft
34.0ft	1.75 fc	73.6 ft	82.7 ft
51.0ft	0.78 fc	110.3 ft	124.1 ft
68.0ft	0.44 fc	147.1 ft	165.5 ft
85.0ft	0.28 fc	183.9 ft	206.8 ft
102.0ft	0.19 fc	220.7 ft	248.2 ft

Vert. Spread: 94.5°
Horiz. Spread: 101.2°



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C (DEG) γ (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338
0	2029	2029	2029	2029	2029	2029	2029	2029	2029	2029	2029	2029	2029	2029	2029	2029
5	2015	2011	2012	2013	2009	2003	2017	2008	2021	2022	2035	2030	2025	2022	2022	2014
10	1973	1975	1969	1965	1972	1963	1967	1958	1966	1977	2003	2006	2005	1990	1987	1975
15	1905	1895	1898	1897	1900	1900	1890	1889	1897	1904	1937	1957	1956	1937	1924	1913
20	1815	1805	1804	1815	1827	1811	1796	1796	1813	1826	1846	1866	1871	1860	1838	1819
25	1725	1698	1699	1714	1732	1705	1688	1694	1708	1730	1744	1758	1764	1742	1734	1724
30	1614	1604	1590	1607	1624	1595	1577	1586	1618	1627	1631	1630	1632	1616	1617	1621
35	1513	1478	1480	1485	1503	1469	1464	1465	1483	1499	1496	1489	1498	1483	1493	1499
40	1388	1357	1353	1356	1374	1345	1340	1328	1363	1365	1365	1350	1359	1342	1351	1379
45	1245	1233	1224	1216	1124	1211	1207	1199	1224	1225	1207	1193	1104	1201	1216	1240
50	1033	1084	1089	946	889	949	1062	1056	1071	1069	1060	920	865	923	1069	1086
55	843	841	846	681	628	674	834	830	827	828	819	658	592	658	828	831
60	618	617	578	435	403	443	616	642	601	631	596	409	361	407	551	611
65	380	421	325	214	160	213	337	411	397	405	319	198	146	200	299	415
70	191	204	117	38.3	36.1	38.8	133	201	192	193	106	33.8	35.6	34.6	107	198
75	39.6	49.6	21.8	22.4	21.8	22.4	22.2	51.1	38.3	46.6	17.3	22.6	23.9	22.0	18.6	47.7
80	6.96	8.84	10.2	11.9	12.3	11.4	10.3	9.12	7.20	8.36	9.07	13.6	14.0	13.4	9.39	8.31
85	1.33	2.24	3.31	4.47	4.68	4.35	3.20	2.18	0.62	1.95	3.70	5.20	5.88	5.40	3.81	2.27
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16
115	0.42	0.37	0.26	0.00	0.00	0.00	0.10	0.42	0.37	0.37	0.16	0.00	0.00	0.00	0.11	0.37
120	0.84	0.74	0.58	0.00	0.00	0.00	0.43	0.79	0.79	0.64	0.69	0.48	0.05	0.16	0.48	0.64
125	1.32	1.32	1.00	0.90	0.79	0.74	0.85	1.27	0.99	1.06	0.95	0.86	0.75	0.64	0.74	0.90
130	1.63	1.48	1.01	1.48	1.27	1.22	1.33	1.48	1.48	1.32	1.12	1.27	1.28	1.22	1.01	1.17
135	1.74	1.53	1.22	1.54	1.43	1.38	1.38	1.53	1.68	1.48	1.43	1.75	1.75	1.43	1.17	1.33
140	1.74	1.69	1.43	1.91	1.85	1.64	1.43	1.75	1.74	1.74	1.43	2.02	2.07	1.75	1.38	1.75
145	2.05	1.69	1.59	2.07	1.86	1.96	1.43	1.85	2.05	1.95	1.55	2.34	2.28	1.96	1.86	1.80
150	2.10	1.69	2.23	2.18	2.28	2.12	1.96	2.01	2.00	2.27	2.02	2.49	2.39	2.22	2.60	2.12
155	2.05	2.01	2.71	2.49	2.55	2.38	2.28	2.22	1.79	2.32	2.34	2.60	2.39	2.27	2.55	2.28
160	1.79	2.11	2.81	2.65	2.55	2.33	2.49	2.28	2.16	2.32	2.44	2.60	2.55	2.33	2.55	2.43
165	2.00	2.11	2.81	2.76	2.65	2.44	2.49	2.28	2.37	2.43	2.65	2.76	2.60	2.55	2.66	2.60
170	2.31	2.53	3.18	2.92	2.92	3.02	3.18	2.59	2.74	2.69	3.02	3.45	3.55	3.50	3.34	3.34
175	2.37	2.80	3.50	3.13	3.76	3.28	3.45	2.96	2.52	2.53	3.02	3.45	3.40	3.92	3.34	3.49
180	2.53	2.96	3.56	3.40	3.77	3.28	3.45	2.91	2.42	2.53	2.97	3.56	3.40	3.71	3.29	3.44

2.2 Electrical, Photometric and Chromaticity Measurements

(Refer to Work Instruction QD25)

Test date	2016-08-25	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	SFL1-50(5700K)		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
STD160203	120.0	60	0.4137	48.94	0.9857	10.32
NB-AC2	277.0	60	0.1903	47.91	0.9091	13.73
DLC Pass Criteria					>= 0.9(-3%)	<= 20(+5)

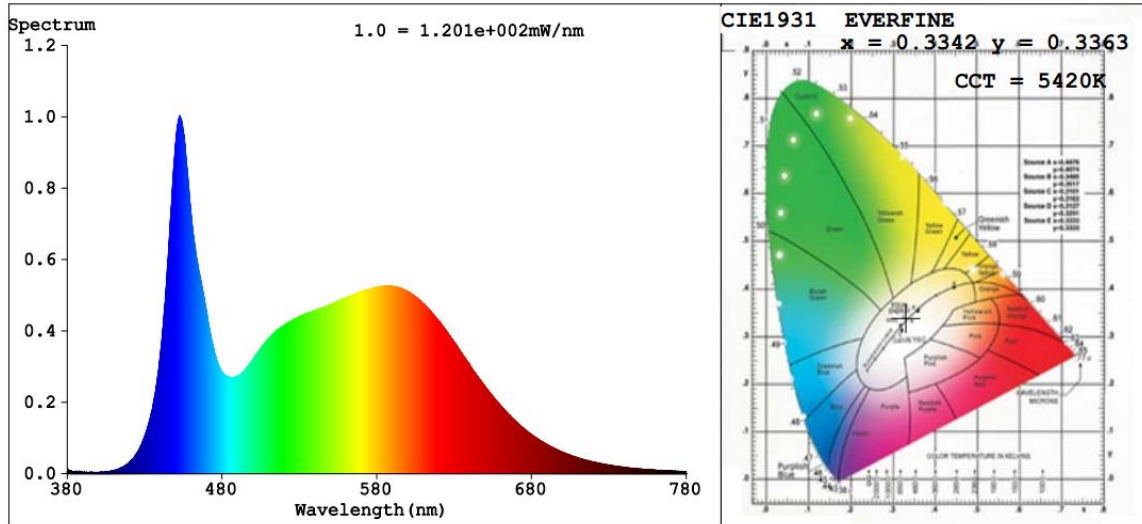
Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	87	R9	26
Frequency (Hz)	60	R2	93	R10	83
CCT (K)	5420	R3	94	R11	85
Duv	-0.0032	R4	86	R12	65
Chromaticity (x, y)	x=0.3342 y=0.3363	R5	87	R13	89
Chromaticity (u', v')	u'=0.2099 v'=0.4754	R6	88	R14	98
Color Rendering Index (CRI)	86.8	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)	4702	4609	>=1000(-10%)	
Luminous Efficacy (lm/W)	96.08	96.20	Standard: >= 90(-3%)	Premium: >= 110(-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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