

**LM-79-08 Test Report**

For

**LIGHT EFFICIENT DESIGN, LLC****(Brand Name: N/A)**

188 S.Northwest Highway, Cary, IL60013, USA

**LED Lamps**

Model name(s): LED-8144M50C-A

Representative (Tested) Model: LED-8144M50C-A

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

Test &amp; Report By:

*Garman Mo*

Engineer: Garman Mo

Date: May.23,2018

Review By:

*Univ Xie*

Manager: Univ Xie

Note: 1.The results contained in this report pertain only to the tested samples.

2.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	LIGHT EFFICIENT DESIGN, LLC	
Brand Name	N/A	
Model Number	LED-8144M50C-A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Lamps	
Rated Voltage / Frequency	220 -347Vac, 50/60 Hz	
Nominal Power	30W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K	
LED Manufacturer	SAMSUNG ELECTRONICS CO., LTD	
LED Model	SPMWH1228FD5WAR0SE	
Sample Number	GZE1801030-H-Y1	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

**Photo**

**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>

**1.2 Test Specifications:**

Date of Receipt	May.15,2018
Date of Test	May.16,2018
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****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  $1^{\circ}$  vertical intervals and  $22.5^{\circ}$  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	2018-05-16	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8144M50C-A		

**Electrical Measurement:**

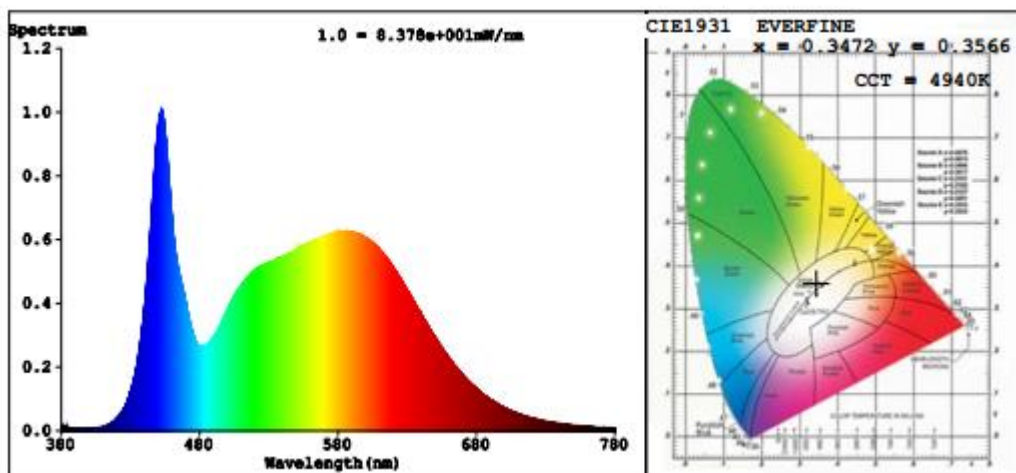
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE180103	277.0	60	0.1199	31.74	0.9560	11.38
0-H-Y1	347.0	60	0.1010	31.81	0.9074	14.62

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

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	82	R9	11
Frequency (Hz)	60	R2	90	R10	75
CCT (K)	4940	R3	94	R11	81
Duv	0.0016	R4	82	R12	58
Chromaticity (x, y)	x=0.3472 y=0.3566	R5	82	R13	84
Chromaticity (u', v')	u'=0.2109 v'=0.4874	R6	85	R14	97
Color Rendering Index (CRI)	83.8	R7	88	R15	77
R9	11	R8	68	--	--

**Photometric Measurement – Goniophotometer Method:**

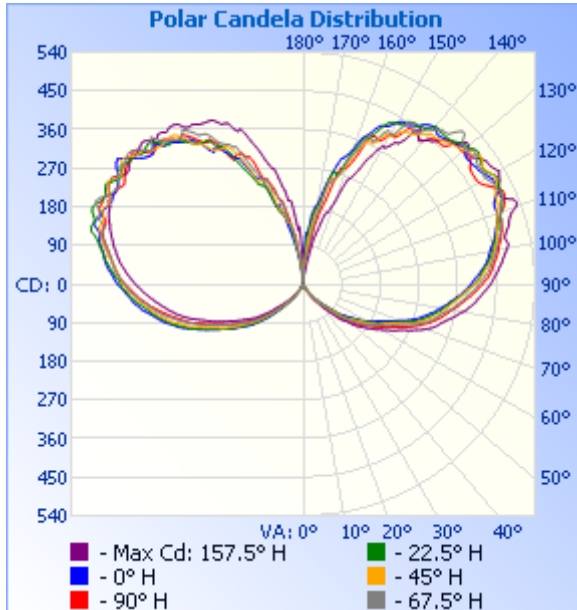
Parameter	Result	
Test Voltage (V)	277.0	347.0
Frequency (Hz)	60	60
Total Luminous (lm)	4004.0	3997.5
Luminous Efficacy (lm/W)	126.15	125.67
Most worst Luminous/Highest Watts	125.67	
Beam Angle (°)	324.4	--
Center Beam Candle Power (cd)	2	--

**Spectral Power Distribution & Chromaticity Diagram**

**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	5.4	0.1%
0-40	26.1	0.7%
0-60	233.6	5.8%
60-90	979.8	24.5%
70-100	1,229.3	30.7%
90-120	1,485.1	37.1%
0-90	1,213.4	30.3%
90-180	2,790.8	69.7%
0-180	4,004.1	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	0.2	0.0%	90-100	479.5	12%
10-20	1.1	0.0%	100-110	507.5	12.7%
20-30	4.1	0.1%	110-120	498.0	12.4%
30-40	20.8	0.5%	120-130	446.4	11.1%
40-50	66.6	1.7%	130-140	366.2	9.1%
50-60	140.8	3.5%	140-150	267.5	6.7%
60-70	230.0	5.7%	150-160	157.9	3.9%
70-80	333.0	8.3%	160-170	59.7	1.5%
80-90	416.8	10.4%	170-180	8.1	0.2%

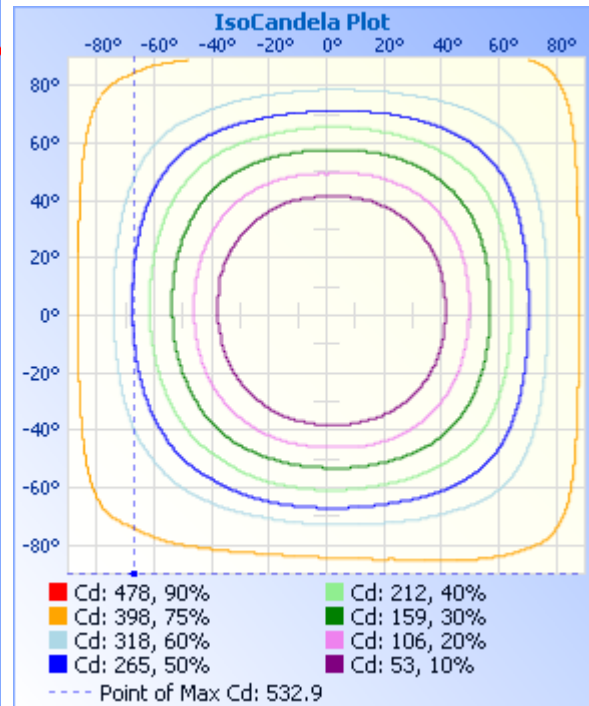
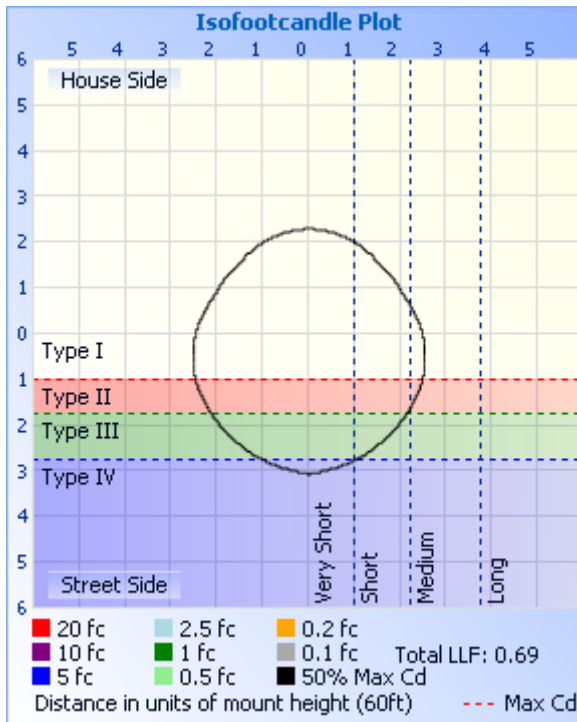
**Photometric Data**



**Illuminance at a Distance**

	Center Beam fc	Beam Width
10.0ft	0.02 fc	25.5 ft
20.0ft	0.00 fc	51.0 ft
30.0ft	0.00 fc	76.5 ft
40.0ft	0.00 fc	101.9 ft
50.0ft	0.00 fc	127.4 ft
60.0ft	0.00 fc	152.9 ft

■ Beam Spread: 103.8°



**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>

## Candela Table - Type C

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	360
0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
6	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
7	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
8	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
9	2	2	2	2	2	2	3	3	2	2	2	2	2	2	2	2	2
10	2	2	2	2	2	3	3	3	3	3	2	2	2	2	2	2	2
11	2	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2
12	2	2	2	3	3	3	3	3	3	3	3	3	2	2	2	2	2
13	2	2	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2
14	3	3	3	3	3	4	4	4	4	3	3	3	3	3	2	2	3
15	3	3	3	4	4	4	4	4	4	4	4	3	3	3	3	3	3
16	3	3	3	4	4	4	5	5	4	4	4	4	3	3	3	3	3
17	3	3	4	4	5	5	5	5	5	5	4	4	4	3	3	3	3
18	4	4	4	5	5	5	6	5	5	5	5	4	4	4	4	4	4
19	4	4	5	5	6	6	6	6	6	5	5	5	4	4	4	4	4
20	4	5	5	6	6	6	6	6	6	6	6	5	5	5	4	4	4
21	5	5	6	6	7	7	7	7	7	6	6	6	5	5	5	5	5
22	6	6	6	7	7	8	8	8	7	7	7	6	6	6	5	5	6
23	6	6	6	7	8	8	8	8	8	7	7	7	6	6	6	6	6
24	6	7	7	8	8	9	9	9	8	8	8	7	7	7	6	6	6
25	7	8	8	9	9	10	10	10	9	9	8	8	7	7	7	7	7
26	8	8	8	9	10	11	11	11	10	9	9	8	8	8	7	7	8
27	8	9	9	10	11	12	12	12	11	10	10	9	8	8	8	8	8
28	9	10	10	11	12	13	13	13	13	12	11	10	9	9	9	9	9

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>

29	10	11	11	12	13	15	17	16	16	13	12	11	10	9	9	9	10
30	11	11	12	13	16	18	20	22	20	17	14	12	12	10	10	10	11
31	12	13	14	15	19	24	27	25	24	21	17	13	13	11	11	11	12
32	13	14	17	20	24	30	31	29	29	25	22	17	15	13	12	12	13
33	14	16	18	24	30	33	34	33	32	29	27	21	19	15	14	13	14
34	18	19	24	29	30	37	38	37	37	33	30	26	22	18	16	15	18
35	21	24	29	33	37	40	42	42	41	37	33	30	27	23	20	20	21
36	25	28	32	39	39	46	47	46	44	40	38	33	31	27	25	25	25
37	30	32	37	41	46	51	53	50	49	47	44	37	34	32	31	28	30
38	33	38	40	46	54	55	56	56	55	51	47	45	39	36	35	33	33
39	38	42	44	48	57	61	62	61	61	55	50	47	43	40	39	37	38
40	46	46	51	54	59	67	69	68	68	61	57	50	48	44	43	42	46
41	48	49	55	60	67	72	76	74	71	69	62	56	53	48	45	48	48
42	51	54	60	68	74	77	80	79	78	75	67	63	58	52	50	50	51
43	59	61	65	71	78	85	86	87	86	80	74	71	65	56	56	55	59
44	64	66	71	75	82	95	94	95	92	87	78	75	69	62	62	61	64
45	69	68	77	82	90	101	104	103	102	95	86	80	74	67	65	67	69
46	74	74	81	90	101	108	112	113	109	101	95	88	81	74	72	72	74
47	79	83	87	101	113	117	122	121	116	108	103	96	89	78	77	76	79
48	88	88	96	109	120	128	130	127	123	119	110	103	98	85	85	82	88
49	100	98	104	115	126	134	137	131	131	127	118	110	107	94	91	89	100
50	108	105	114	122	130	143	143	140	139	136	126	118	112	100	97	100	108
51	112	116	124	127	137	149	148	150	148	144	134	125	118	109	105	106	112
52	117	126	131	135	144	154	155	158	155	149	142	133	124	116	114	113	117
53	123	131	136	142	151	160	164	165	161	157	149	140	132	124	123	122	123
54	130	136	141	148	159	169	171	170	167	164	155	148	143	132	130	129	130
55	136	140	146	153	167	176	179	178	172	171	162	155	148	139	135	138	136
56	143	146	152	163	171	184	187	184	180	178	169	161	157	145	142	143	143
57	150	154	159	171	177	192	197	191	188	185	178	167	162	151	149	149	150
58	160	162	167	177	182	200	206	199	196	194	187	172	169	157	157	154	160
59	169	170	175	185	191	207	213	205	203	202	194	180	179	166	162	161	169
60	175	177	184	191	197	214	220	212	209	209	202	187	186	172	167	168	175

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>



61	179	184	192	198	205	222	227	220	216	216	211	196	193	179	176	175	179
62	185	191	199	203	212	231	235	229	225	222	218	203	199	186	182	183	185
63	190	199	204	211	218	239	243	237	234	230	222	210	206	194	193	190	190
64	196	205	209	220	228	246	254	245	242	239	229	217	212	200	200	198	196
65	203	211	217	227	236	256	265	253	251	249	239	225	219	208	209	204	203
66	211	220	223	234	247	267	272	264	259	257	248	235	227	217	217	214	211
67	218	227	232	240	256	279	283	275	269	268	257	243	237	223	223	223	218
68	229	236	242	252	266	287	294	285	277	277	264	253	247	232	231	230	229
69	238	244	253	261	274	297	304	297	288	287	275	262	255	242	240	239	238
70	249	257	264	273	283	306	310	305	298	294	285	270	265	253	252	246	249
71	258	265	276	283	291	314	318	314	307	302	294	278	276	261	260	256	258
72	267	278	284	292	299	320	325	322	313	311	300	286	284	270	271	265	267
73	276	285	292	302	308	329	331	329	321	318	309	295	290	276	279	275	276
74	284	292	300	309	314	336	339	332	330	324	319	304	298	285	289	282	284
75	290	297	309	317	321	341	344	340	338	332	326	311	305	291	295	291	290
76	298	306	317	321	327	345	350	346	344	338	332	320	313	300	301	297	298
77	304	312	323	326	334	351	355	354	350	345	340	329	321	310	308	306	304
78	313	318	328	331	339	356	362	362	357	352	347	337	328	318	315	311	313
79	317	325	332	339	345	362	369	368	364	359	351	344	337	323	323	319	317
80	325	330	338	348	350	370	375	376	372	364	358	350	345	329	330	324	325
81	331	335	342	354	358	378	383	385	381	369	363	357	353	335	337	332	331
82	339	341	346	359	365	385	390	391	385	377	370	363	362	343	343	337	339
83	344	347	353	367	370	393	397	398	392	384	375	371	368	350	348	345	344
84	352	355	358	371	378	400	403	404	399	392	384	379	374	357	354	351	352
85	358	362	365	379	384	408	410	408	403	399	390	385	382	363	360	358	358
86	366	371	370	384	392	415	415	413	407	405	395	391	388	370	367	365	366
87	372	378	377	390	398	422	420	419	414	410	401	400	395	376	371	372	372
88	379	384	382	398	405	428	428	425	418	416	409	406	401	385	379	378	379
89	385	391	393	403	411	435	432	431	425	423	414	410	408	390	385	384	385
90	391	400	399	409	418	441	440	437	432	425	420	417	414	398	389	390	391
91	396	406	406	415	424	446	448	441	438	429	424	422	421	404	394	397	396
92	402	411	413	422	431	452	455	445	442	435	429	428	427	410	401	402	402

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>

93	409	415	419	427	435	459	458	450	446	441	432	433	431	417	409	409	409
94	414	418	423	433	440	462	463	456	453	447	436	439	436	421	415	414	414
95	420	423	428	436	443	465	466	459	458	453	439	441	441	429	421	419	420
96	427	429	437	440	446	468	469	465	462	458	443	446	445	433	427	425	427
97	432	435	442	445	451	470	469	468	466	464	450	449	450	438	432	431	432
98	435	440	446	449	455	473	471	473	468	468	458	451	454	440	436	435	435
99	439	445	449	453	459	476	475	478	471	473	460	457	457	446	443	440	439
100	442	449	452	457	462	482	477	483	477	479	468	463	462	451	447	443	442
101	446	452	456	460	465	486	476	487	482	484	474	467	468	455	450	449	446
102	452	454	460	465	469	489	478	484	486	489	478	474	472	459	453	452	452
103	456	458	464	468	473	492	482	482	486	497	482	479	477	461	456	456	456
104	461	463	465	472	476	495	487	486	488	508	487	485	481	466	463	460	461
105	464	467	467	476	479	499	489	492	497	512	490	482	484	469	467	464	464
106	467	472	470	479	481	504	489	499	507	509	493	480	484	472	469	468	467
107	471	474	473	483	483	510	490	501	507	507	489	491	481	473	470	470	471
108	474	479	476	487	483	513	489	506	499	513	488	504	483	476	472	475	474
109	479	486	478	486	486	517	491	514	496	520	493	502	494	481	476	479	479
110	481	490	480	490	491	523	496	528	497	522	498	503	507	486	480	482	481
111	482	495	486	494	500	524	499	533	493	519	498	518	507	495	481	483	482
112	480	498	490	496	506	521	504	528	489	512	491	520	505	500	485	485	480
113	483	503	491	503	509	514	508	511	485	506	488	515	507	505	492	493	483
114	489	508	492	508	513	510	509	503	487	504	493	505	503	506	497	494	489
115	497	508	495	509	514	506	514	502	489	508	499	496	493	508	494	498	497
116	508	509	498	504	507	506	515	505	487	513	504	492	486	515	490	505	508
117	507	511	506	502	497	507	513	512	488	515	510	487	487	521	493	509	507
118	506	513	509	501	489	512	507	519	489	507	513	487	482	521	497	509	506
119	505	516	513	497	479	514	501	522	494	500	507	493	477	514	502	510	505
120	499	511	510	492	473	509	498	527	497	493	497	499	480	505	503	502	499
121	496	503	507	491	471	505	494	521	504	492	493	504	485	503	502	493	496
122	491	498	501	494	471	509	492	517	513	500	496	504	489	509	507	485	491
123	487	498	499	494	470	512	497	515	519	507	501	500	494	512	517	485	487
124	487	501	504	493	471	509	501	513	522	503	510	501	495	512	522	489	487

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>

125	484	503	508	494	474	505	497	508	511	495	512	504	493	508	521	496	484
126	483	507	509	498	482	496	491	500	500	495	505	507	496	502	520	499	483
127	481	511	501	504	486	488	489	491	488	493	494	508	499	493	518	496	481
128	481	509	495	506	484	487	487	491	477	491	490	504	504	492	514	493	481
129	487	503	493	497	484	486	486	494	470	483	487	499	493	491	508	495	487
130	492	499	488	491	483	486	485	502	465	481	486	487	477	490	507	496	492
131	491	497	482	494	481	481	486	505	464	485	472	473	465	488	508	500	491
132	485	492	479	501	483	466	474	492	472	488	466	470	464	487	510	498	485
133	482	486	478	514	478	453	462	479	476	484	466	483	470	486	509	489	482
134	478	482	474	514	463	455	455	475	467	475	462	493	473	483	502	483	478
135	475	478	470	501	457	455	455	475	456	465	461	475	473	475	495	482	475
136	473	478	465	486	457	463	456	467	456	450	461	463	468	471	494	486	473
137	469	478	462	484	456	470	455	457	451	450	463	459	461	469	493	484	469
138	468	477	459	484	455	465	446	448	445	451	463	451	453	469	490	476	468
139	473	480	460	476	449	453	434	444	437	445	460	445	445	473	490	479	473
140	477	480	457	468	436	442	419	437	433	434	452	443	446	472	488	480	477
141	475	467	450	464	432	436	420	429	432	425	435	447	448	465	478	478	475
142	471	461	444	455	436	434	417	435	428	416	415	457	439	454	471	472	471
143	464	459	438	442	438	430	412	454	416	409	410	447	427	450	465	457	464
144	456	456	431	438	440	419	405	437	406	409	405	438	414	450	458	453	456
145	451	456	430	448	441	409	395	408	381	403	390	423	404	447	451	453	451
146	447	455	430	455	438	396	383	396	371	404	376	421	399	443	448	450	447
147	442	451	422	447	415	379	377	394	378	396	375	418	402	446	441	444	442
148	445	437	414	427	403	375	359	380	375	377	369	407	391	451	432	442	445
149	441	435	403	405	407	372	337	370	363	376	367	387	375	445	433	440	441
150	434	435	398	405	402	365	331	373	352	367	365	378	344	429	440	439	434
151	424	429	399	410	387	340	331	358	339	347	369	373	331	415	431	437	424
152	416	426	389	399	377	320	306	338	333	319	358	370	337	406	411	428	416
153	414	413	370	380	379	296	286	324	329	301	341	358	339	396	408	418	414
154	410	398	365	369	383	279	286	298	310	287	323	356	338	376	408	417	410
155	400	384	368	375	380	282	279	281	293	271	302	330	336	365	395	413	400
156	385	373	363	381	367	283	269	270	273	256	271	306	323	364	378	396	385

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>

157	375	372	347	363	330	264	258	264	267	250	260	288	323	376	364	387	375
158	367	355	330	337	310	229	255	236	270	248	260	273	307	365	359	390	367
159	347	335	315	323	294	206	228	204	255	242	260	261	269	353	348	375	347
160	330	320	291	312	287	188	206	191	223	221	242	260	260	342	334	354	330
161	319	295	276	282	283	196	193	177	192	197	229	255	259	322	327	339	319
162	311	271	264	268	285	199	178	173	190	179	195	232	244	298	298	324	311
163	306	263	254	260	265	168	155	168	195	174	182	220	234	285	291	303	306
164	290	271	256	250	231	128	143	147	170	178	177	212	210	267	287	291	290
165	272	272	255	245	203	111	117	130	161	172	168	194	203	255	266	280	272
166	255	253	229	247	186	82	100	120	136	156	151	190	199	253	259	276	255
167	239	225	210	214	175	70	79	109	123	146	146	149	175	239	241	255	239
168	218	201	187	179	155	54	62	87	104	144	146	140	154	213	222	234	218
169	198	191	172	164	138	48	56	66	95	112	140	134	135	207	205	221	198
170	186	181	170	140	106	31	50	58	80	85	119	120	123	193	202	198	186
171	184	175	147	113	86	29	40	44	65	78	93	94	116	188	194	197	184
172	172	157	133	83	79	17	28	34	53	68	74	76	84	180	189	194	172
173	162	137	112	74	72	8	22	28	39	49	60	65	66	163	164	163	162
174	134	130	103	64	68	5	18	20	23	40	40	49	48	147	145	141	134
175	113	117	82	59	39	4	10	8	13	22	32	32	34	146	140	127	113
176	121	95	55	36	34	3	5	4	6	10	13	20	23	143	128	133	121
177	111	59	42	21	23	5	5	5	4	5	7	8	10	110	106	113	111
178	84	47	45	24	20	19	19	16	15	10	8	4	4	89	81	78	84
179	72	46	38	14	9	32	33	35	38	27	17	4	4	71	51	63	72
180	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38

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