

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-8144M30-A

Representative (Tested) Model: LED-8144M30-A

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

Test & 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-8144M30-A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Lamps	
Rated Voltage / Frequency	120 -277Vac, 50/60 Hz	
Nominal Power	30W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K	
LED Manufacturer	SAMSUNG ELECTRONICS CO., LTD	
LED Model	SPMWH1228FD5WAV0SE	
Sample Number	GZE1801030-H-K1	
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	May.15,2018
Date of Test	May.16,2018
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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$, 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 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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 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 $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$. 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	2018-05-16	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8144M30-A		

Electrical Measurement:

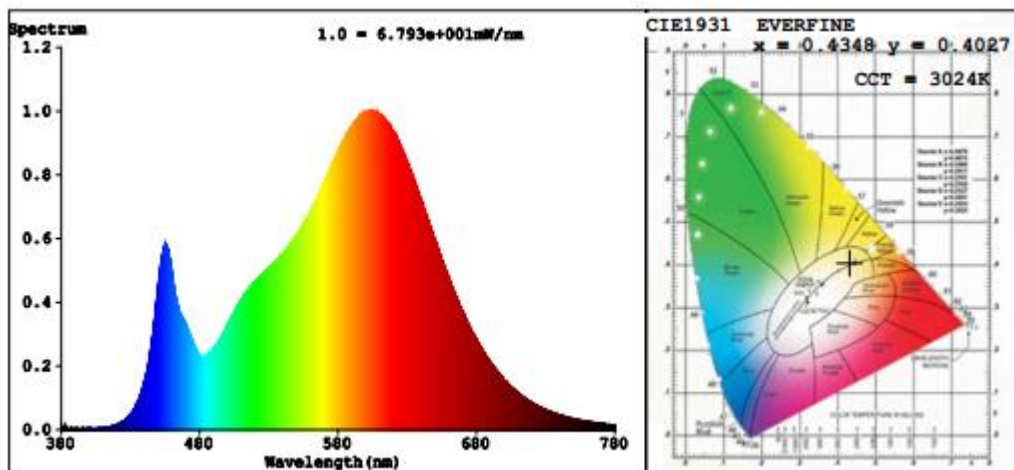
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE180103	120.0	60	0.2625	30.98	0.9834	14.42
0-H-K1	277.0	60	0.1245	32.05	0.9291	12.87

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	83	R9	11
Frequency (Hz)	60	R2	93	R10	84
CCT (K)	3024	R3	95	R11	80
Duv	-0.0003	R4	80	R12	72
Chromaticity (x, y)	x=0.4348 y=0.4027	R5	83	R13	85
Chromaticity (u', v')	u'=0.2498 v'=0.5205	R6	91	R14	98
Color Rendering Index (CRI)	83.4	R7	82	R15	75
R9	11	R8	60	--	--

Photometric Measurement – Goniophotometer Method:

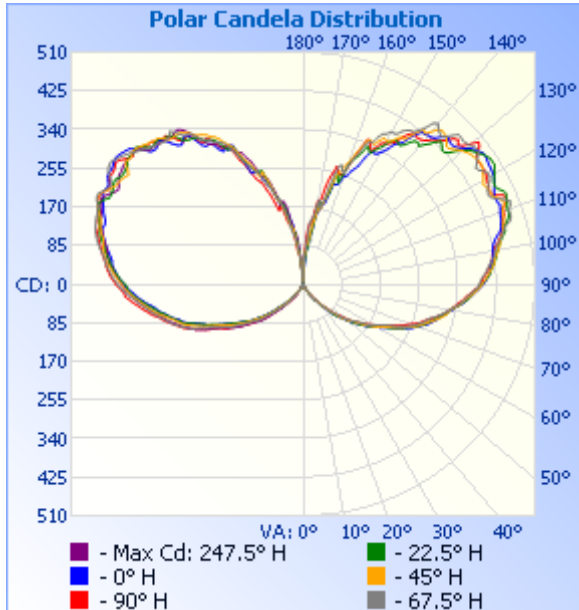
Parameter	Result	
Test Voltage (V)	120.0	277.0
Frequency (Hz)	60	60
Total Luminous (lm)	3807.4	3891.7
Luminous Efficacy (lm/W)	122.90	121.43
Most worst Luminous/Highest Watts	118.80	
Beam Angle (°)	320.3	--
Center Beam Candle Power (cd)	2	--

Spectral Power Distribution & Chromaticity Diagram

Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	5.3	0.1%
0-40	25.8	0.7%
0-60	224.5	5.9%
60-90	939.9	24.7%
70-100	1,175.7	30.9%
90-120	1,413.5	37.1%
0-90	1,164.4	30.6%
90-180	2,643.2	69.4%
0-180	3,807.6	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	0.2	0.0%	90-100	457.6	12%
10-20	1.1	0.0%	100-110	484.3	12.7%
20-30	4.1	0.1%	110-120	471.6	12.4%
30-40	20.5	0.5%	120-130	425.3	11.2%
40-50	64.4	1.7%	130-140	344.7	9.1%
50-60	134.3	3.5%	140-150	248.9	6.5%
60-70	221.9	5.8%	150-160	145.7	3.8%
70-80	318.4	8.4%	160-170	57.0	1.5%
80-90	399.7	10.5%	170-180	8.1	0.2%

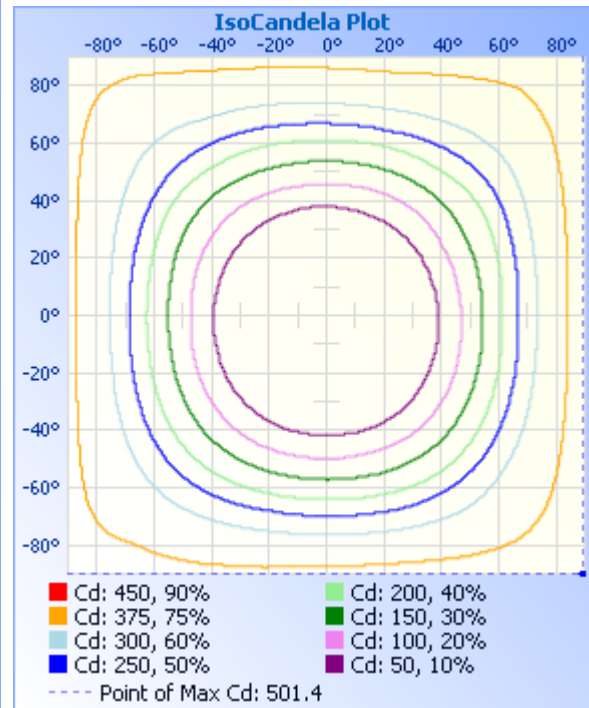
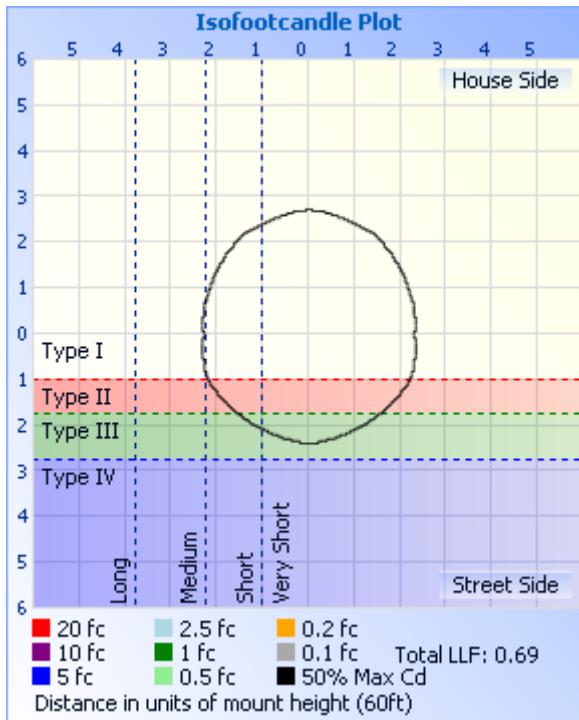
Photometric Data



Illuminance at a Distance

	Center Beam fc	Beam Width
10.0ft	0.02 fc	19.9 ft
20.0ft	0.00 fc	39.8 ft
30.0ft	0.00 fc	59.6 ft
40.0ft	0.00 fc	79.5 ft
50.0ft	0.00 fc	99.4 ft
60.0ft	0.00 fc	119.3 ft

■ Beam Spread: 89.6°



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	2	2	2	2	2	2	2	2	2	2	2
10	3	3	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3
11	3	3	3	2	2	2	2	2	2	2	2	2	3	3	3	3	3
12	3	3	3	3	3	2	2	2	2	2	3	3	3	3	3	3	3
13	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3
14	4	4	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4
15	4	4	4	4	3	3	3	3	3	3	3	3	3	4	4	4	4
16	4	4	4	4	4	3	3	3	3	3	3	3	4	4	4	4	4
17	5	5	5	4	4	4	4	3	3	3	4	4	4	5	5	5	5
18	5	5	5	5	4	4	4	4	4	4	4	4	5	5	5	5	5
19	6	6	6	5	5	4	4	4	4	4	4	5	5	6	6	6	6
20	6	6	6	6	5	5	5	5	4	5	5	5	5	6	6	7	6
21	7	7	7	6	6	5	5	5	5	5	5	6	6	7	7	7	7
22	8	7	7	7	6	6	6	5	5	6	6	6	7	7	7	8	8
23	8	8	8	7	7	6	6	6	6	6	6	7	7	8	8	8	8
24	9	9	8	8	7	7	7	7	6	7	7	7	7	8	9	9	9
25	10	9	9	9	8	7	7	7	7	7	8	8	8	9	9	10	10
26	11	10	10	9	9	8	8	8	8	8	8	9	9	10	10	11	11
27	12	11	11	10	9	9	9	8	8	9	9	9	10	10	11	11	12
28	13	12	12	11	10	9	9	9	9	9	10	10	11	11	13	13	13

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	14	13	13	12	11	10	10	10	10	10	11	11	12	12	14	14	14
30	19	15	14	13	12	11	11	11	11	11	12	13	14	14	17	18	19
31	23	20	17	16	15	13	12	12	12	12	13	15	17	21	21	22	23
32	25	26	22	20	18	15	14	13	13	13	16	18	21	24	26	26	25
33	30	27	26	25	22	19	17	16	16	17	19	22	27	27	29	32	30
34	33	35	30	29	28	24	21	20	19	20	24	25	30	34	33	34	33
35	36	36	35	33	30	29	26	23	23	26	27	30	34	35	36	39	36
36	41	41	39	36	34	33	30	28	28	28	32	35	39	43	45	41	41
37	44	44	41	42	40	37	35	32	31	32	36	39	45	46	45	45	44
38	47	47	46	45	44	42	39	36	36	35	41	43	47	48	49	52	47
39	54	52	51	48	46	47	43	39	40	42	44	48	52	56	58	54	54
40	61	59	55	54	49	48	46	44	43	44	46	52	60	63	61	60	61
41	64	63	59	59	56	53	51	49	48	48	53	58	60	65	64	64	64
42	69	67	65	64	63	61	56	53	53	54	59	64	67	70	70	72	69
43	77	72	72	70	68	65	61	58	59	61	63	70	73	76	78	76	77
44	83	83	78	75	72	71	65	63	64	66	67	74	81	85	83	82	83
45	92	92	84	81	77	75	72	68	68	70	73	80	87	93	90	89	92
46	98	98	90	88	87	81	78	75	75	75	81	88	95	103	98	98	98
47	103	103	96	93	95	90	85	82	82	84	89	94	104	108	104	106	103
48	110	108	105	101	103	97	94	90	88	92	95	101	111	112	114	116	110
49	115	115	116	110	107	104	100	96	97	99	101	110	118	117	120	120	115
50	122	120	118	117	111	112	106	104	103	106	109	119	124	123	126	126	122
51	129	127	126	123	120	120	114	112	111	113	116	126	130	130	133	131	129
52	134	135	131	127	126	128	121	118	117	118	123	131	137	136	139	135	134
53	142	141	134	133	134	134	130	124	125	126	129	136	143	145	145	142	142
54	148	148	142	139	141	140	135	130	132	134	135	142	150	153	152	149	148
55	154	154	150	144	146	145	142	138	140	141	144	150	158	159	159	158	154
56	162	161	157	150	154	152	149	146	146	147	150	158	166	166	167	166	162
57	169	169	163	156	160	157	156	153	151	151	158	166	172	171	172	173	169
58	175	175	172	168	166	164	162	159	158	157	164	173	179	177	181	180	175
59	181	180	180	174	172	172	169	166	164	164	171	182	187	182	187	186	181
60	188	186	187	178	179	179	177	174	172	171	178	189	195	187	195	192	188

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	197	194	194	185	186	186	185	183	178	178	187	195	201	193	202	197	197
62	203	201	200	193	191	192	192	191	186	187	193	201	206	201	208	204	203
63	210	211	208	199	201	199	197	196	194	194	199	210	215	210	214	212	210
64	219	219	216	206	208	207	204	203	203	203	206	219	226	218	222	221	219
65	229	227	225	217	215	215	213	210	213	211	217	226	237	228	234	236	229
66	238	238	234	229	225	222	224	221	221	219	225	237	246	237	242	245	238
67	248	244	242	237	232	231	231	229	229	229	237	247	255	246	254	256	248
68	257	253	251	248	240	242	240	239	235	236	247	261	264	255	260	262	257
69	264	260	260	255	247	252	250	250	243	245	257	270	273	263	270	269	264
70	271	269	269	262	256	259	260	258	251	255	265	277	280	272	279	275	271
71	278	277	274	268	265	266	267	264	263	266	273	285	286	280	287	283	278
72	287	283	282	276	273	274	275	273	274	277	281	291	293	287	292	289	287
73	292	288	288	280	277	282	283	280	279	281	286	300	299	293	297	296	292
74	297	295	296	284	285	288	289	287	284	288	291	305	307	300	303	303	297
75	303	300	302	290	292	298	297	294	293	294	298	310	314	306	311	309	303
76	308	307	309	299	302	306	302	302	301	301	306	317	320	310	315	313	308
77	312	312	316	306	307	312	311	308	305	307	313	324	325	316	323	318	312
78	320	321	322	314	316	320	318	315	312	314	322	329	334	323	329	324	320
79	324	325	324	320	321	328	324	322	320	323	330	337	342	330	335	331	324
80	332	329	329	328	327	333	331	329	326	328	336	343	348	336	341	338	332
81	337	335	336	335	333	337	338	337	331	336	342	348	356	341	347	344	337
82	344	344	344	342	339	343	344	342	339	344	350	355	363	347	352	351	344
83	353	351	350	348	344	352	350	348	348	350	356	362	370	356	360	358	353
84	359	359	355	354	351	359	355	355	354	358	362	368	378	362	366	365	359
85	365	366	362	359	357	368	363	359	362	365	369	374	385	370	372	373	365
86	371	370	369	364	363	377	369	365	369	373	377	383	393	376	377	377	371
87	378	375	377	371	370	383	375	372	374	379	383	390	394	383	385	384	378
88	384	381	383	378	377	388	381	379	382	386	388	396	399	389	391	390	384
89	391	387	389	385	385	392	388	384	390	388	395	404	406	395	396	397	391
90	396	393	394	388	390	395	393	390	394	392	399	408	412	400	401	400	396
91	401	400	399	390	394	401	397	394	400	399	406	414	417	407	406	404	401
92	406	406	403	394	396	406	406	401	406	406	411	419	423	412	412	410	406

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	410	411	409	399	401	409	409	406	411	410	416	424	427	416	415	414	410
94	413	414	413	404	406	414	412	410	414	417	421	428	431	421	419	419	413
95	415	417	417	408	410	419	417	413	420	422	426	434	434	424	425	421	415
96	417	422	422	413	415	424	421	417	423	427	432	436	436	427	431	428	417
97	419	425	424	416	418	428	426	424	424	429	437	440	440	431	434	431	419
98	421	429	427	423	420	432	433	429	428	435	441	443	445	435	436	434	421
99	423	431	432	426	422	436	439	432	432	440	443	449	448	438	436	436	423
100	424	435	436	430	426	439	439	435	437	443	446	454	451	441	438	438	424
101	426	439	440	434	430	442	440	438	442	447	448	459	456	444	440	442	426
102	428	443	443	439	438	448	440	442	446	452	449	463	459	447	442	446	428
103	433	448	445	446	444	454	443	446	449	457	451	467	463	451	447	452	433
104	440	454	451	451	448	460	452	451	455	460	457	471	468	455	452	455	440
105	449	461	455	457	452	460	460	456	459	462	461	473	466	461	458	458	449
106	453	459	458	463	458	466	458	459	457	466	465	475	467	466	460	464	453
107	455	469	460	475	461	477	453	465	456	469	466	477	471	470	463	467	455
108	459	475	464	481	462	487	455	472	458	472	469	478	473	477	465	470	459
109	459	479	466	481	468	490	459	474	463	476	473	479	477	482	469	470	459
110	461	479	467	482	469	498	463	472	468	478	481	481	482	478	473	472	461
111	464	481	472	489	471	494	468	477	470	484	486	483	483	480	478	478	464
112	466	484	477	490	481	498	476	484	475	482	489	490	487	483	483	479	466
113	464	485	475	478	486	500	478	488	478	476	491	493	489	483	487	482	464
114	463	489	468	464	483	501	477	482	483	467	488	492	486	478	489	478	463
115	464	486	459	454	466	494	469	471	485	465	483	485	483	474	482	470	464
116	467	477	459	452	458	484	468	467	482	467	475	480	476	473	470	462	467
117	472	474	459	455	459	474	466	465	480	469	470	476	477	467	459	457	472
118	477	476	455	461	462	472	463	465	486	472	465	479	483	463	453	459	477
119	481	480	454	469	464	475	458	463	492	474	464	484	488	459	453	464	481
120	484	486	458	474	467	486	454	466	492	468	461	495	486	455	451	469	484
121	484	491	462	474	469	490	459	465	492	464	458	500	486	459	452	471	484
122	485	497	465	469	472	487	467	459	494	464	453	501	488	466	453	471	485
123	486	496	470	461	471	481	472	454	496	465	459	500	492	465	454	473	486
124	488	496	473	458	471	482	473	459	498	465	472	493	488	464	454	474	488

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	491	492	472	466	470	492	476	469	496	472	474	490	479	467	459	474	491
126	490	487	470	474	471	491	477	477	492	474	470	484	473	468	460	472	490
127	485	479	468	483	480	473	476	480	488	472	472	479	469	469	457	472	485
128	480	475	466	484	492	456	477	478	484	472	475	472	475	467	460	473	480
129	475	469	461	482	497	442	465	473	473	476	474	466	473	467	462	470	475
130	465	457	457	477	480	434	445	466	460	471	470	461	468	470	463	460	465
131	457	447	451	474	464	429	434	465	445	459	466	454	459	469	460	450	457
132	451	432	444	473	458	425	436	474	441	451	462	451	459	469	454	447	451
133	449	426	438	474	466	419	445	483	441	448	459	447	459	466	446	447	449
134	449	424	438	474	461	427	449	481	445	452	455	445	452	462	443	442	449
135	453	431	446	463	449	431	446	472	448	451	453	440	445	455	448	442	453
136	451	437	453	452	439	426	434	454	440	445	446	437	442	460	445	442	451
137	443	428	454	446	431	412	426	443	423	441	435	437	446	467	441	437	443
138	433	416	455	448	429	393	428	440	411	441	431	440	437	472	435	432	433
139	428	407	450	454	420	391	436	446	406	431	432	446	422	469	431	435	428
140	428	397	437	461	413	404	429	442	412	415	431	436	409	456	433	438	428
141	425	400	427	456	410	409	413	428	417	408	429	422	412	447	434	437	425
142	424	400	430	437	409	396	399	411	415	404	423	415	415	444	436	430	424
143	413	391	421	424	411	383	394	402	401	402	416	415	404	439	436	418	413
144	399	379	404	414	411	380	384	389	378	398	405	402	387	441	434	403	399
145	379	373	389	412	402	376	381	372	370	388	400	387	382	442	428	387	379
146	374	374	390	408	389	367	390	368	372	380	397	384	386	432	416	372	374
147	366	378	384	401	372	364	387	372	368	378	392	379	381	411	405	367	366
148	351	373	372	390	367	376	381	372	350	374	382	367	369	393	402	362	351
149	340	364	367	387	362	370	395	367	341	364	378	365	351	388	398	353	340
150	333	351	364	387	358	350	394	353	344	349	369	359	348	376	380	346	333
151	328	342	368	378	354	339	374	343	338	338	356	352	349	372	363	344	328
152	328	333	358	375	340	342	365	344	339	344	345	335	333	369	357	346	328
153	326	323	346	364	330	341	345	324	343	338	336	320	306	355	373	327	326
154	310	330	346	346	334	319	329	306	310	306	317	302	294	353	380	321	310
155	288	335	351	347	349	304	308	291	270	295	300	290	271	349	359	318	288
156	278	317	345	336	348	304	297	279	268	281	292	280	254	329	332	304	278

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	270	305	323	312	326	294	298	263	274	273	278	266	246	315	301	293	270
158	257	297	310	300	303	243	299	248	265	267	255	270	240	299	288	271	257
159	255	287	293	282	279	228	295	245	247	265	258	247	222	282	287	251	255
160	243	255	282	261	259	230	287	244	242	265	263	231	209	264	277	254	243
161	232	235	270	264	254	219	244	244	230	241	242	229	188	262	271	247	232
162	230	254	259	275	254	212	216	236	217	219	224	220	171	273	268	234	230
163	230	249	248	272	262	194	200	208	201	201	195	196	175	246	240	213	230
164	210	212	223	251	269	183	185	189	181	196	189	194	186	223	213	192	210
165	185	196	203	221	253	181	170	187	178	182	176	182	164	209	185	185	185
166	181	188	186	193	242	175	168	184	179	180	164	163	144	195	175	188	181
167	178	181	169	170	221	151	158	163	164	164	145	149	136	181	177	185	178
168	166	185	174	172	192	137	152	143	160	140	131	126	139	178	170	172	166
169	159	171	167	189	184	129	135	133	144	126	128	113	130	164	144	140	159
170	144	145	146	177	185	127	117	123	133	121	126	108	106	147	129	126	144
171	118	118	134	152	162	108	104	111	112	114	94	99	74	131	116	110	118
172	107	106	116	148	140	82	94	87	96	91	74	79	69	123	118	113	107
173	94	88	100	142	134	65	75	74	80	72	68	66	66	128	115	99	94
174	78	75	89	134	135	50	53	57	65	57	62	55	42	112	90	73	78
175	74	73	86	100	124	24	31	46	37	28	39	37	26	83	68	52	74
176	52	60	75	77	105	15	19	24	22	16	21	20	15	66	67	47	52
177	34	49	66	71	79	9	6	9	7	7	8	7	5	60	50	38	34
178	16	37	53	61	68	4	4	4	4	4	5	6	9	47	27	22	16
179	9	26	35	52	61	11	5	4	3	7	12	16	21	30	18	14	9
180	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18

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 *******