

LM-79-08 Test Report

For

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

188 S. Northwest Highway Cary, IL60013

LED Luminaires

Model name(s): LED-8033E30C-A

Representative (Tested) Model: LED-8033E30C-A

Model Different: N/A

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: Apr.13,2017

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

Tel: 8620-3229 0320

Fax: 8620-32290422

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

1.1 Product Information:

Organization Name	LIGHT EFFICIENT DESIGN	
Brand Name	N/A	
Model Number	LED-8033E30C-A	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	LED Luminaires	
Rated Voltage / Frequency	220-347Vac, 50/60 Hz	
Nominal Power	35W	
Rated Initial Lamp Lumen	--	
Declared CCT	3000K	
LED Manufacturer	Samsung	
LED Model	LM561B	
Sample Number	GZE161214-AX1	
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	Jan 16,2017
Date of Test	Jan 17,2017
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 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	2017-01-17	Test Ambient:	25.2 ° C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8033E30C-A		

Electrical Measurement :

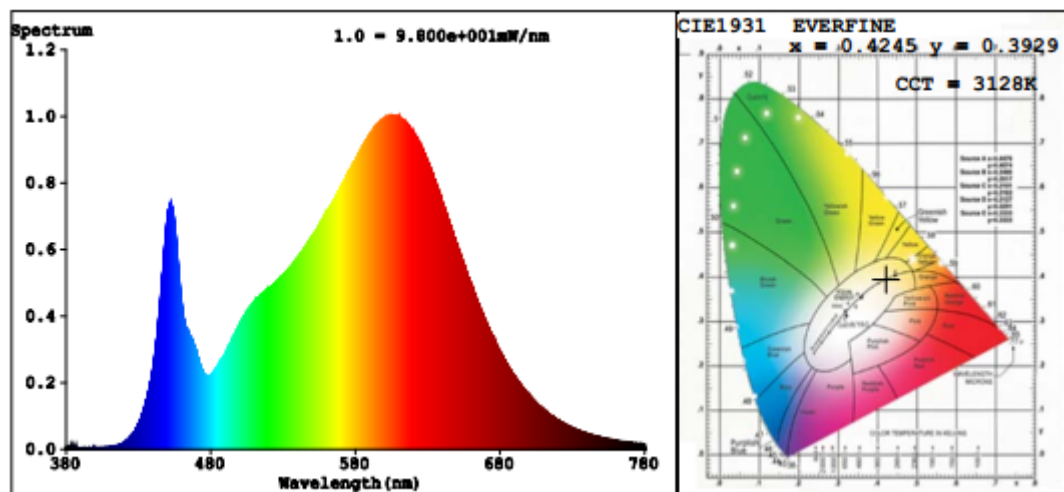
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
GZE161214-	277.0	60	0.1365	36.06	0.9534
AX1	347.0	60	0.1105	36.22	0.9445

Chromaticity Measurement - Sphere-Spectroradiometer Method :

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	85	R9	21
Frequency (Hz)	60	R2	94	R10	85
CCT (K)	3128	R3	96	R11	83
Duv	-0.0027	R4	84	R12	75
Chromaticity (x, y)	x=0.4245 y=0.3929	R5	85	R13	87
Chromaticity (u', v')	u'=0.2473 v'=0.5150	R6	92	R14	99
Color Rendering Index (CRI)	85.4	R7	84	R15	79
R9	21	R8	65	--	--

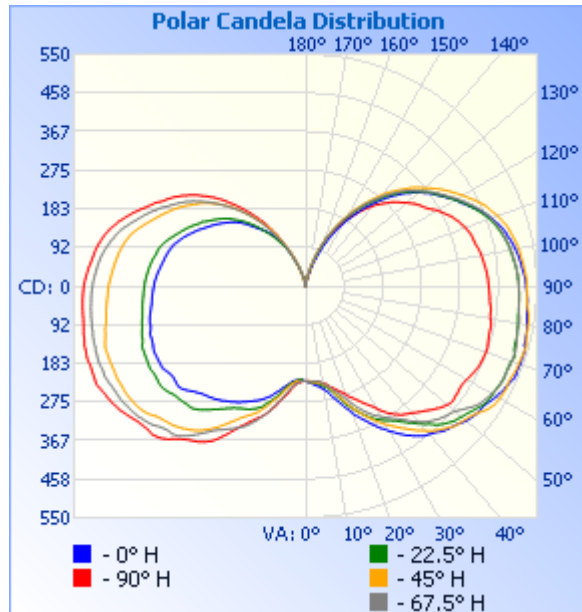
Photometric Measurement – Goniophotometer Method :

Parameter	Result	
Test Voltage (V)	277.0	347.0
Frequency (Hz)	60	60
Total Luminous (lm)	4739.6	4718.3
Luminous Efficacy (lm/W)	131.44	130.27
Beam Angle (°)	266.5	--
Center Beam Candle Power (cd)	225	--

Spectral Power Distribution & Chromaticity Diagram

Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	253.5	5.3%
0-40	498.2	10.5%
0-60	1,250.7	26.4%
60-90	1,476.7	31.2%
70-100	1,494.9	31.5%
90-120	1,326.8	28%
0-90	2,727.4	57.5%
90-180	2,012.5	42.5%
0-180	4,739.9	100%

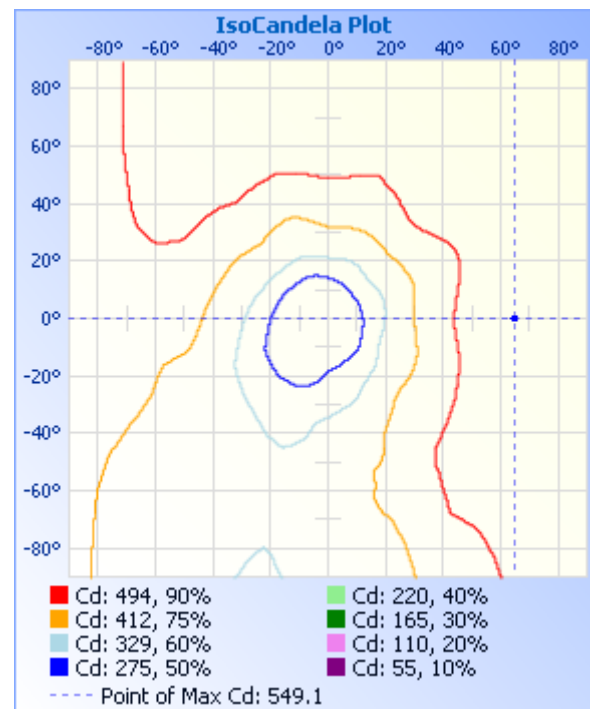
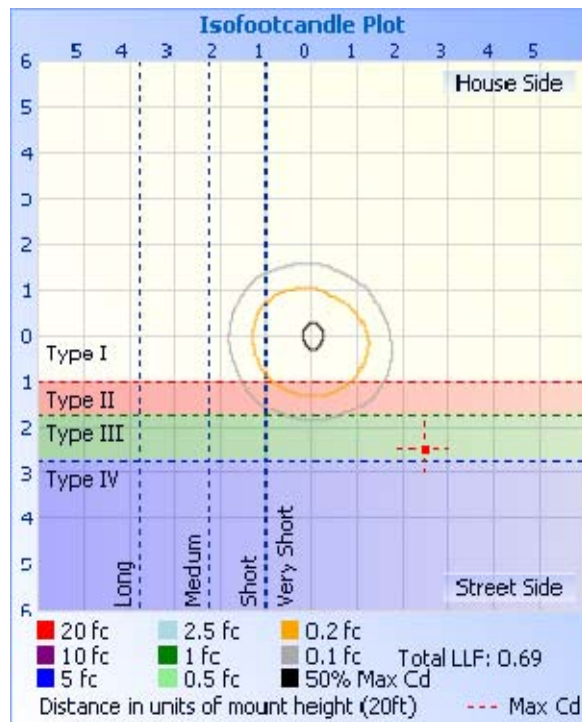
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	22.4	0.5%	90-100	490.9	10.4%
10-20	77.7	1.6%	100-110	453.1	9.6%
20-30	153.5	3.2%	110-120	382.7	8.1%
30-40	244.7	5.2%	120-130	297.4	6.3%
40-50	336.5	7.1%	130-140	207.4	4.4%
50-60	416.0	8.8%	140-150	119.9	2.5%
60-70	472.8	10.0%	150-160	50.1	1.1%
70-80	500.5	10.6%	160-170	10.4	0.2%
80-90	503.5	10.6%	170-180	0.5	0%

Photometric Data


Illuminance at a Distance

	Center Beam fc	Beam Width	
17.0ft	0.78 fc	34.0 ft	17.0 ft
34.0ft	0.19 fc	68.0 ft	34.0 ft
51.0ft	0.09 fc	102.0 ft	51.0 ft
68.0ft	0.05 fc	136.0 ft	68.0 ft
85.0ft	0.03 fc	170.0 ft	85.0 ft
102.0ft	0.02 fc	204.0 ft	102.0 ft

■ Vert. Spread: 90.0°
■ Horiz. Spread: 53.1°



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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	225	225	225	225	225	225	225	225	225	225	225	225	225	225	225	225	225
1	227	226	226	225	224	224	223	225	224	225	226	225	225	226	227	227	227
2	229	226	227	227	225	224	223	224	223	223	226	226	227	228	230	230	229
3	230	228	227	228	226	223	222	223	223	222	225	226	228	231	234	232	230
4	232	229	228	228	227	223	222	222	223	223	225	229	230	232	236	235	232
5	234	230	228	227	227	223	223	222	224	224	226	232	232	237	237	237	234
6	237	231	229	227	227	225	224	223	226	227	228	235	235	243	242	240	237
7	239	233	231	227	227	228	225	225	226	229	231	238	241	247	248	244	239
8	242	235	233	229	229	230	227	228	228	233	233	244	246	252	254	249	242
9	245	238	234	231	232	229	229	231	232	235	238	250	256	257	260	254	245
10	249	241	237	235	234	231	230	234	237	239	244	257	262	263	264	258	249
11	253	243	239	237	236	233	231	235	241	244	249	264	269	271	270	263	253
12	257	246	243	242	238	235	233	236	245	252	257	273	275	278	275	268	257
13	265	251	247	245	242	237	234	237	249	259	265	282	283	285	283	275	265
14	273	258	253	249	248	241	237	239	255	267	272	288	293	293	292	282	273
15	279	264	261	255	249	242	240	243	260	273	278	297	299	299	298	288	279
16	285	271	268	261	254	246	241	246	264	279	284	307	307	307	308	295	285
17	293	279	274	264	258	249	242	247	270	286	292	315	316	313	314	300	293
18	302	288	284	273	263	253	244	248	275	291	301	323	322	319	320	307	302
19	310	298	292	280	267	257	248	251	279	298	307	330	328	324	328	313	310
20	319	303	301	287	272	260	252	252	284	305	314	339	333	328	335	319	319
21	328	310	310	295	279	264	255	254	287	309	321	345	340	334	342	326	328
22	334	319	316	302	284	266	260	257	291	313	326	353	345	341	348	332	334
23	342	325	325	312	289	271	264	262	295	316	331	360	352	349	354	338	342
24	349	332	332	319	295	274	268	266	297	319	336	365	361	355	362	345	349
25	357	338	341	327	300	277	271	272	301	322	342	370	368	360	368	350	357
26	366	346	349	333	307	280	274	277	304	324	346	374	378	368	376	357	366
27	374	352	356	341	313	284	279	284	307	326	354	379	387	375	382	364	374
28	382	357	364	347	320	287	286	291	311	328	362	383	398	384	392	373	382

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29	388	362	371	351	326	293	291	297	314	331	369	388	407	392	401	380	388
30	397	367	379	358	334	297	296	303	318	334	378	393	418	400	411	389	397
31	404	371	384	363	343	304	300	308	321	337	385	397	428	406	418	397	404
32	412	376	392	369	351	309	306	311	324	342	395	403	434	413	426	405	412
33	419	381	398	374	359	316	309	313	327	346	402	409	441	420	433	412	419
34	427	385	406	380	365	321	312	315	330	352	410	418	445	426	438	419	427
35	432	392	412	385	372	326	314	316	332	356	416	425	450	432	444	425	432
36	439	398	420	391	377	330	317	316	336	362	423	434	454	437	448	428	439
37	445	406	427	398	382	333	320	315	339	366	429	442	457	443	454	431	445
38	451	412	435	407	385	337	323	314	341	372	434	451	462	448	459	434	451
39	455	420	441	413	389	340	326	312	344	378	439	458	467	455	468	438	455
40	458	426	448	420	392	346	328	312	346	383	442	464	474	460	474	440	458
41	462	434	456	427	398	350	332	312	348	388	447	469	480	467	483	444	462
42	466	440	461	433	402	355	335	313	350	392	450	472	489	470	489	447	466
43	472	449	467	437	406	359	340	315	353	396	454	473	495	473	496	452	472
44	476	457	471	441	411	365	342	319	355	397	457	474	500	476	501	457	476
45	479	463	476	446	416	370	343	322	358	397	459	477	504	479	507	464	479
46	481	467	481	449	421	373	343	327	362	399	462	481	507	482	511	469	481
47	485	472	486	453	425	373	344	331	366	401	464	486	507	485	513	474	485
48	488	477	488	455	431	373	346	335	371	402	467	491	506	489	515	480	488
49	493	479	491	458	435	373	348	338	376	403	470	494	508	493	518	484	493
50	497	483	494	463	439	372	350	343	380	404	476	497	510	499	522	488	497
51	501	486	497	468	442	371	352	346	383	406	481	500	512	505	526	491	501
52	503	489	501	475	443	372	355	348	385	410	485	503	515	509	530	493	503
53	506	493	505	481	442	373	360	351	384	413	488	506	518	512	533	495	506
54	508	498	509	488	441	373	365	353	383	416	490	508	522	514	534	497	508
55	509	502	516	494	441	375	369	354	382	417	492	509	525	514	535	499	509
56	509	506	522	499	440	376	372	355	382	418	493	510	529	514	537	502	509
57	512	509	526	502	439	376	374	355	383	418	495	513	532	514	537	506	512
58	516	511	530	505	439	376	375	354	385	416	496	514	534	515	537	509	516
59	520	513	532	508	441	375	375	355	388	416	497	516	537	516	537	512	520
60	524	513	533	510	443	375	374	355	391	416	497	516	539	517	538	515	524

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61	526	514	533	513	445	376	372	355	392	417	497	517	540	518	538	517	526
62	530	515	534	516	447	379	370	354	392	418	497	518	541	520	539	520	530
63	532	517	535	518	449	382	369	352	392	418	498	519	544	522	541	522	532
64	535	518	534	519	451	384	369	351	392	417	499	521	547	525	543	523	535
65	537	520	534	519	453	384	369	351	392	416	498	522	549	526	546	525	537
66	541	519	535	519	454	384	369	351	392	416	497	523	548	526	547	524	541
67	543	519	536	519	455	384	370	351	392	415	498	522	547	525	548	522	543
68	541	519	538	520	455	383	370	351	390	415	498	522	546	524	546	521	541
69	542	519	539	521	456	383	372	349	388	415	498	524	546	523	544	521	542
70	542	520	539	522	456	383	374	346	387	414	498	524	545	523	543	521	542
71	542	524	540	521	457	382	375	346	387	410	498	523	547	523	545	521	542
72	543	523	541	522	455	381	374	345	387	407	498	522	547	522	547	518	543
73	543	518	542	522	453	380	372	343	387	407	498	522	545	521	544	516	543
74	542	517	543	521	452	380	371	340	384	405	496	520	545	521	542	516	542
75	538	516	542	520	451	380	369	338	381	403	493	521	544	519	541	514	538
76	538	517	540	517	451	378	367	336	380	400	490	520	542	517	541	515	538
77	537	516	538	516	451	377	364	335	380	399	488	519	541	516	541	514	537
78	537	514	537	514	451	375	362	334	379	398	488	517	540	515	540	514	537
79	536	514	538	514	449	373	358	332	377	395	484	517	538	515	539	512	536
80	534	513	536	514	446	372	357	330	375	394	482	516	536	514	536	511	534
81	532	511	537	514	444	372	355	327	373	393	480	515	535	514	535	510	532
82	531	510	536	513	444	369	353	326	371	392	479	515	534	514	535	510	531
83	530	510	534	510	444	367	350	324	369	391	478	514	534	513	535	509	530
84	528	509	531	509	441	366	349	324	368	390	476	513	533	512	535	509	528
85	528	509	529	508	440	364	347	323	367	389	475	512	532	512	534	508	528
86	528	508	527	509	439	363	347	322	366	387	473	511	531	510	533	507	528
87	527	508	527	508	438	363	346	321	364	386	472	510	531	509	532	507	527
88	526	507	527	508	437	363	346	320	363	385	471	509	530	508	531	506	526
89	525	507	526	507	436	362	345	319	362	384	470	508	528	507	531	506	525
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91	523	506	525	506	434	360	342	317	360	382	467	505	526	505	528	503	523
92	522	505	525	505	434	358	341	317	358	382	465	503	524	503	526	502	522

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93	520	504	523	504	433	357	341	316	357	380	463	501	522	501	524	501	520
94	518	504	522	503	432	356	340	315	355	378	461	500	519	500	523	499	518
95	516	502	521	503	431	356	339	313	353	377	460	498	517	498	522	497	516
96	515	500	520	501	429	356	337	312	351	376	458	496	514	496	521	496	515
97	513	499	518	500	428	355	336	311	349	374	457	494	512	494	518	494	513
98	511	497	517	499	427	354	334	310	347	373	455	492	510	492	516	492	511
99	508	496	516	497	425	353	333	309	345	371	453	489	508	490	513	490	508
100	506	494	514	495	424	352	331	307	343	369	451	486	506	487	510	487	506
101	504	492	513	494	423	350	329	306	342	366	449	482	504	485	508	485	504
102	501	490	510	492	421	348	327	304	340	364	447	479	501	482	505	482	501
103	498	488	508	489	418	346	326	303	339	362	444	476	497	479	502	480	498
104	495	485	505	488	416	345	324	301	336	361	441	471	494	475	497	476	495
105	493	483	503	485	414	344	323	299	335	359	438	468	490	470	494	473	493
106	489	480	501	483	414	342	320	297	332	355	435	463	486	466	491	469	489
107	485	476	498	480	412	340	318	294	330	352	430	458	480	460	486	465	485
108	480	473	494	476	410	338	315	291	326	347	425	452	475	455	481	460	480
109	475	469	490	473	407	336	313	288	323	344	421	446	470	449	475	455	475
110	471	466	487	470	405	333	311	285	319	339	415	441	463	443	470	450	471
111	465	461	481	466	401	330	307	282	315	334	410	434	458	438	463	445	465
112	460	456	476	461	397	327	305	278	312	330	404	428	451	431	455	438	460
113	454	451	472	457	394	324	301	274	307	326	399	422	446	426	449	433	454
114	448	445	469	451	390	319	298	270	303	322	393	417	438	419	443	427	448
115	440	440	463	445	386	315	294	266	298	318	388	411	432	414	436	422	440
116	433	434	456	440	381	312	291	262	295	314	383	406	425	408	430	416	433
117	427	429	451	433	375	307	287	258	290	309	379	398	419	401	422	411	427
118	420	422	443	427	371	303	283	254	286	305	373	393	413	396	415	403	420
119	415	416	438	421	365	300	280	251	281	300	368	387	408	389	409	396	415
120	411	410	431	416	360	296	276	247	277	296	364	379	401	384	401	391	411
121	405	403	424	409	353	291	272	243	273	291	358	373	394	378	396	386	405
122	397	398	418	402	346	287	267	240	269	289	353	367	389	373	390	381	397
123	391	393	412	396	341	282	264	236	265	282	348	362	383	366	384	372	391
124	385	385	406	389	337	278	260	233	260	277	342	355	378	359	376	366	385

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125	378	380	399	384	334	276	256	227	257	273	336	349	371	353	368	359	378
126	374	374	392	378	329	272	252	224	252	268	331	341	365	345	362	352	374
127	367	369	384	372	325	267	248	220	249	264	324	335	357	339	354	346	367
128	359	363	378	364	319	262	245	215	244	259	320	327	351	330	347	339	359
129	353	357	370	357	314	258	241	211	240	255	313	320	343	324	337	334	353
130	346	350	363	351	309	253	237	205	236	249	308	311	336	315	330	327	346
131	339	342	357	345	303	250	233	201	231	245	300	304	327	306	321	319	339
132	330	336	349	340	298	245	230	195	227	239	293	295	320	299	311	313	330
133	324	328	342	333	292	241	226	191	222	232	287	287	310	290	304	304	324
134	315	321	334	324	287	235	221	185	217	226	279	278	303	283	295	296	315
135	305	313	324	317	281	231	218	180	211	220	272	271	293	273	287	287	305
136	298	304	317	308	274	225	213	174	206	214	263	262	285	264	277	280	298
137	288	296	308	300	268	218	209	169	199	207	256	253	275	257	267	271	288
138	280	287	301	291	261	213	204	164	192	201	246	246	264	247	259	262	280
139	269	279	292	285	256	208	199	158	186	194	238	237	255	239	249	254	269
140	259	269	284	275	249	203	193	153	180	188	228	230	244	229	241	245	259
141	251	262	274	265	241	197	188	147	176	180	221	220	236	219	230	237	251
142	241	253	264	258	234	192	182	141	170	174	211	212	225	210	221	227	241
143	232	244	255	249	226	186	177	136	166	166	204	201	217	201	211	217	232
144	221	237	245	241	219	181	171	131	161	159	194	193	206	193	200	210	221
145	211	227	237	232	211	174	165	125	156	153	187	182	197	184	192	200	211
146	202	219	226	221	202	169	161	120	151	146	178	174	187	174	182	191	202
147	191	208	217	213	196	161	154	116	146	140	169	163	179	167	174	184	191
148	183	198	209	202	188	154	148	110	139	132	162	153	167	156	164	174	183
149	172	191	198	194	181	149	140	104	132	125	153	145	157	147	155	167	172
150	162	181	187	183	172	141	133	98	127	119	146	137	145	136	146	157	162
151	154	173	179	173	164	135	127	92	120	114	134	130	137	126	135	146	154
152	143	163	169	165	156	123	122	86	113	108	125	120	122	119	125	137	143
153	135	154	160	155	147	113	114	82	103	103	113	112	111	108	117	126	135
154	125	146	150	145	140	106	109	77	96	94	106	103	102	98	107	117	125
155	116	136	139	137	132	100	102	73	87	85	96	95	91	91	99	107	116
156	107	127	130	127	123	91	91	69	80	78	88	85	85	82	90	98	107

Laboratory: Standard-Tech Co. Ltd Testing Center
NVLAP CODE: 201011-0

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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	96	116	120	120	116	83	82	63	70	68	77	75	77	74	80	90	96
158	88	105	112	112	107	76	71	58	62	62	69	69	68	66	72	82	88
159	79	96	101	102	98	69	62	53	58	55	64	63	60	58	64	76	79
160	70	85	92	94	88	63	53	49	52	52	52	56	51	51	56	67	70
161	63	76	84	85	76	61	48	44	45	46	45	46	45	44	49	58	63
162	56	70	75	77	66	56	44	40	38	38	37	41	39	38	42	51	56
163	49	62	65	67	54	50	42	35	34	33	29	33	34	33	36	44	49
164	43	55	58	59	42	45	44	33	29	28	17	27	27	26	31	36	43
165	36	46	51	53	33	38	40	29	26	24	12	19	23	22	25	32	36
166	31	39	45	47	26	31	36	25	22	19	10	12	18	17	20	26	31
167	26	33	38	39	23	27	31	22	18	15	7	8	12	13	16	21	26
168	21	28	31	32	19	22	28	18	15	11	5	3	8	10	12	17	21
169	17	22	26	24	14	20	23	16	12	9	3	2	6	7	10	13	17
170	14	18	21	18	12	17	18	13	10	7	3	2	5	5	7	10	14
171	10	14	17	13	9	14	14	10	8	6	3	2	3	4	5	8	10
172	8	10	13	9	7	9	13	6	7	5	3	2	2	3	4	5	8
173	5	8	10	8	6	8	9	5	5	3	2	1	1	2	3	4	5
174	3	5	6	5	4	6	7	4	3	3	1	1	1	2	2	3	3
175	3	3	4	4	3	4	5	4	2	2	1	1	1	1	1	2	3
176	2	2	3	3	2	2	2	2	2	1	1	1	1	1	1	1	2
177	1	1	1	2	1	1	2	1	1	1	1	1	1	1	1	1	1
178	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
179	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
180	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-331	2 meter Integrating Sphere	2016-07-01	2017-06-30
ST-R-327	Spectral analysis system HAAS-2000	2016-07-01	2017-06-30
D204	Standard Lamp	2016-07-12	2017-07-11
PF2010	Power Meter for Integrating Sphere	2016-07-01	2017-06-30
GO-R5000	Goniophotometer system	2016-07-01	2017-06-30
D908S	Standard Lamp	2016-07-12	2017-07-11
PF210	Power Meter for Goniophotometer	2016-07-07	2017-07-06
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 *******