

LM-79-08 Test Report

For

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

188 S.Northwest Highway, Cary, IL60013, USA

LED Luminaires

Model name(s): LED-8146M50C-A

Representative (Tested) Model: LED-8146M50C-A

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

Test & Report By:

Garman Mo

Engineer: Garman Mo

Date: May.18,2018

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-8146M50C-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	65W		
Rated Initial Lamp Lumen	--		
Declared CCT	5000K		
LED Manufacturer	SAMSUNG ELECTRONICS CO., LTD		
LED Model	SPMWH1228FD5WAR0SE		
Sample Number	GZE1801030-H-AE1		
Luminaire Aperture (for downlights)	--	in. mm mm s	
Luminaire Length	--		
Luminaires Width	--		
Number of Units (modular products)	N/A		
Photo			
			

1.2 Test Specifications:

Date of Receipt	May.01,2018
Date of Test	May.02,2018
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 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	2018-05-02	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	LED-8146M50C-A		

Electrical Measurement:

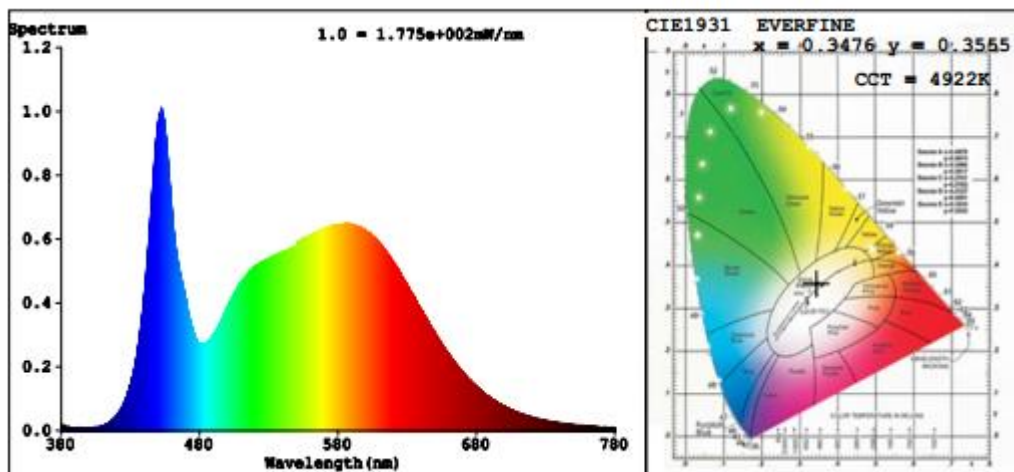
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE180103	277.0	60	0.2433	64.43	0.9562	12.55
0-H-AE1	347.0	60	0.2075	65.45	0.9088	16.61

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)	4922	R3	94	R11	81
Duv	0.0010	R4	82	R12	59
Chromaticity (x, y)	x=0.3476 y=0.3555	R5	82	R13	84
Chromaticity (u', v')	u'=0.2116 v'=0.4869	R6	85	R14	97
Color Rendering Index (CRI)	83.8	R7	88	R15	77
R9	11	R8	68	--	--

Photometric Measurement – Goniophotometer Method:

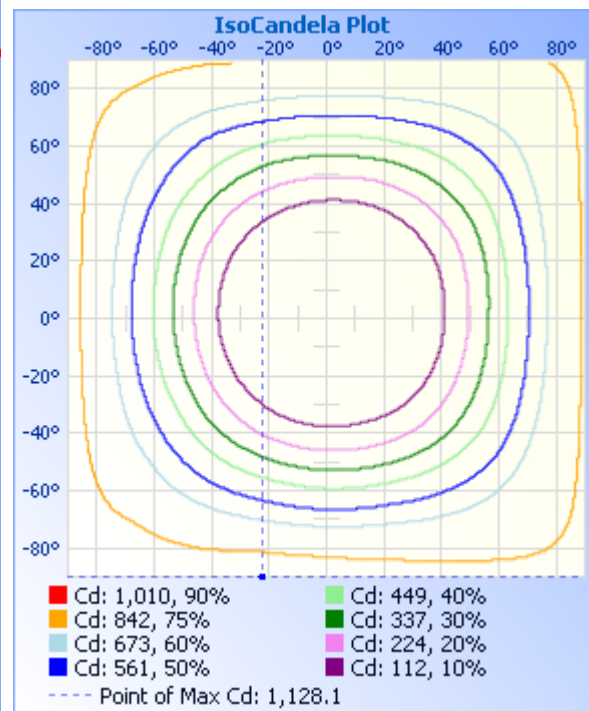
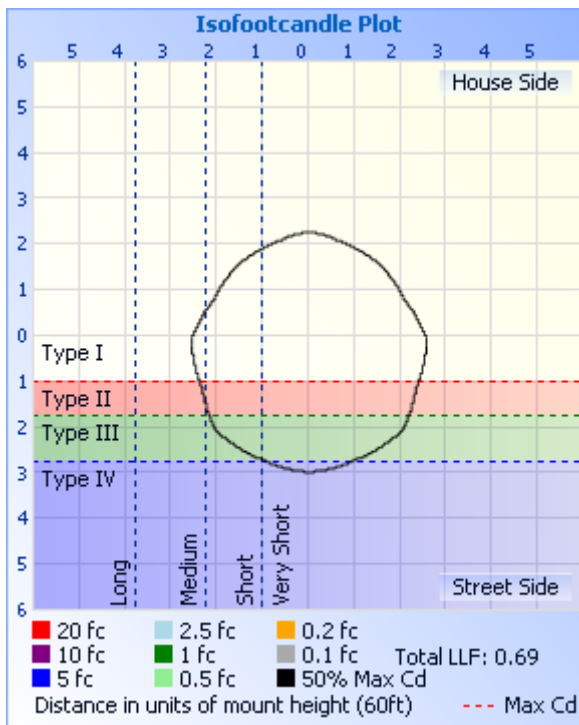
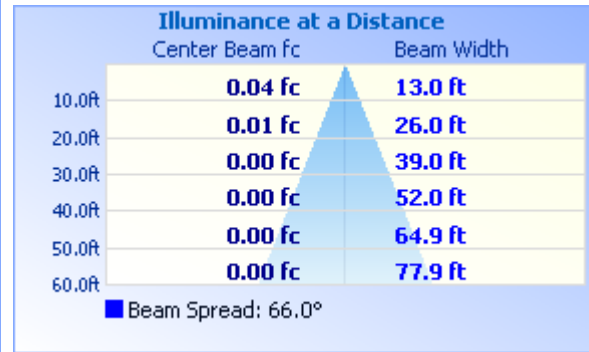
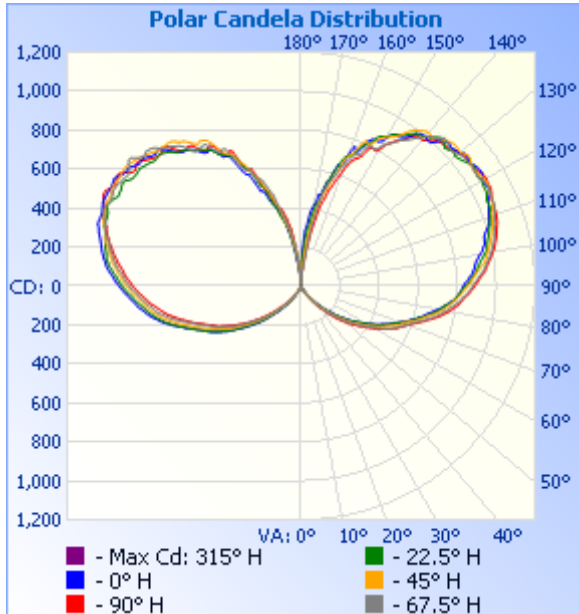
Parameter	Result	
Test Voltage (V)	277.0	347.0
Frequency (Hz)	60	60
Total Luminous (lm)	8591.1	8659.1
Luminous Efficacy (lm/W)	133.34	132.30
Most worst Luminous/Highest Watts	131.26	
Beam Angle (°)	321.8	--
Center Beam Candle Power (cd)	4	--

Spectral Power Distribution & Chromaticity Diagram

Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	12.6	0.1%
0-40	58.2	0.7%
0-60	509.7	5.9%
60-90	2,103.6	24.5%
70-100	2,625.7	30.6%
90-120	3,175.1	37%
0-90	2,613.3	30.4%
90-180	5,978.2	69.6%
0-180	8,591.5	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	0.4	0.0%	90-100	1,022.6	11.9%
10-20	2.5	0.0%	100-110	1,084.6	12.6%
20-30	9.6	0.1%	110-120	1,067.9	12.4%
30-40	45.6	0.5%	120-130	956.8	11.1%
40-50	145.2	1.7%	130-140	786.2	9.2%
50-60	306.3	3.6%	140-150	567.7	6.6%
60-70	500.5	5.8%	150-160	340.4	4%
70-80	709.8	8.3%	160-170	133.8	1.6%
80-90	893.3	10.4%	170-180	18.1	0.2%

Photometric Data



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	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
4	4	4	4	4	4	4	5	4	4	4	4	4	4	4	4	4	4
5	4	4	4	4	4	4	5	5	4	4	4	4	4	4	4	4	4
6	4	4	4	4	4	5	5	5	5	5	4	4	4	4	4	4	4
7	4	4	4	5	5	5	5	5	5	5	5	5	4	4	4	4	4
8	4	4	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4
9	4	5	5	5	5	6	6	6	5	5	5	5	5	5	5	4	4
10	5	5	5	5	6	6	6	6	6	6	6	5	5	5	5	5	5
11	5	5	5	6	6	7	7	7	7	6	6	6	6	5	5	5	5
12	5	5	6	6	7	7	7	7	7	7	6	6	6	6	5	5	5
13	6	6	6	7	7	8	8	8	8	7	7	7	6	6	6	5	6
14	6	6	7	8	8	8	9	9	9	8	8	7	7	6	6	6	6
15	7	7	7	8	9	9	10	10	9	9	8	8	8	7	7	6	7
16	7	7	8	9	10	10	11	11	10	10	9	9	8	8	7	7	7
17	8	8	9	10	11	11	12	12	12	11	10	10	9	9	8	8	8
18	8	9	10	11	12	12	13	13	13	12	11	11	10	9	9	8	8
19	9	10	11	13	14	14	14	14	14	13	12	12	11	10	10	9	9
20	10	11	12	14	15	15	15	16	15	14	13	13	12	11	10	10	10
21	11	12	13	15	17	16	17	17	17	16	15	14	13	12	11	11	11
22	12	13	14	17	18	18	18	18	18	17	16	15	14	13	12	12	12
23	14	15	16	18	20	19	19	20	20	18	17	16	16	14	13	13	14
24	15	16	17	19	22	20	21	21	21	20	19	18	16	15	14	14	15
25	16	17	19	21	23	22	22	23	24	22	21	19	18	17	16	16	16
26	17	19	21	22	25	23	24	25	25	23	23	21	19	18	17	17	17
27	19	20	22	24	27	26	26	27	27	26	24	22	21	19	18	18	19
28	20	22	24	26	29	28	28	30	30	28	26	24	23	21	20	20	20

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	22	24	26	29	32	33	32	34	33	31	28	26	24	23	22	21	22
30	24	26	29	32	37	42	41	41	39	34	31	29	26	25	24	23	24
31	26	29	32	37	43	52	54	51	50	42	34	32	29	27	25	25	26
32	29	32	36	44	51	60	65	59	60	51	42	35	32	29	28	27	29
33	33	36	46	52	61	71	76	69	69	65	54	44	38	33	31	31	33
34	38	45	56	64	69	82	86	80	79	77	65	55	45	37	35	35	38
35	47	56	63	74	79	92	98	92	90	87	76	66	54	44	42	41	47
36	59	65	74	82	90	103	106	103	99	95	85	75	66	54	51	50	59
37	68	76	84	92	99	112	115	114	112	106	92	81	76	63	61	60	68
38	77	86	94	102	111	122	127	125	120	116	100	92	86	75	72	70	77
39	86	94	103	111	124	131	139	134	133	125	111	103	96	85	84	81	86
40	95	102	113	122	133	146	147	149	143	137	123	115	105	93	92	91	95
41	106	116	123	133	148	159	164	165	162	146	136	122	116	103	102	101	106
42	118	125	134	143	159	170	177	177	175	163	144	134	127	113	111	111	118
43	126	136	147	160	173	189	194	195	187	174	160	148	140	121	121	121	126
44	138	150	160	172	190	203	206	206	202	191	174	164	153	134	130	132	138
45	157	168	172	188	203	217	224	226	214	207	189	176	163	149	144	145	157
46	169	177	188	200	216	235	240	239	231	221	206	187	180	159	156	160	169
47	181	193	201	213	230	254	257	261	249	238	218	203	195	172	170	171	181
48	195	207	217	225	248	271	273	279	267	256	231	220	209	185	181	186	195
49	213	220	230	244	263	285	288	292	282	272	250	238	225	200	197	198	213
50	230	235	248	263	278	300	305	308	296	286	268	255	241	216	214	214	230
51	244	248	265	278	292	314	323	323	312	303	284	266	256	227	228	233	244
52	261	263	279	294	311	331	342	340	327	320	296	280	272	242	244	247	261
53	272	279	295	305	326	348	356	356	346	338	313	296	286	255	257	261	272
54	287	297	312	323	338	368	374	375	363	350	331	313	303	274	274	275	287
55	306	309	328	342	355	384	388	391	379	372	350	326	323	291	289	292	306
56	322	324	344	358	368	405	405	410	394	392	363	343	337	304	303	310	322
57	339	338	353	374	384	423	420	431	414	411	382	364	353	319	321	325	339
58	350	350	374	386	400	442	446	450	434	426	404	380	367	336	335	340	350
59	370	370	390	407	417	459	467	465	454	447	424	399	386	357	355	356	370
60	384	387	408	423	435	473	484	479	469	463	439	414	403	372	369	376	384

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	401	403	422	442	454	490	494	497	486	481	455	428	417	391	387	390	401
62	414	419	441	459	469	508	511	512	502	495	471	443	434	406	403	410	414
63	434	438	458	482	488	526	528	525	518	511	487	461	452	423	420	427	434
64	447	453	473	497	504	538	543	542	529	529	499	475	472	440	434	441	447
65	461	471	484	513	515	551	555	560	544	544	516	493	484	453	450	458	461
66	480	484	500	528	533	568	571	574	558	556	533	506	494	470	465	473	480
67	494	500	516	542	544	581	591	588	571	576	549	517	508	485	484	489	494
68	510	510	536	551	556	598	612	606	589	592	568	537	527	497	501	501	510
69	525	529	547	567	568	616	627	626	609	606	587	552	540	517	515	518	525
70	542	545	553	580	583	635	644	643	630	625	604	570	559	533	533	533	542
71	557	567	565	595	597	651	662	662	646	644	619	585	579	552	547	552	557
72	576	582	589	607	617	670	677	681	667	664	639	606	595	567	564	569	576
73	590	597	609	627	635	692	696	705	689	681	659	627	612	583	578	589	590
74	611	610	625	643	655	709	716	724	707	701	675	645	628	599	597	602	611
75	624	628	639	665	671	729	738	746	727	720	694	668	649	615	612	621	624
76	642	647	656	684	695	748	757	763	745	733	711	689	664	629	631	636	642
77	654	670	672	703	712	769	775	773	759	749	728	706	683	651	646	654	654
78	669	684	696	719	733	785	790	789	777	765	741	719	701	665	664	670	669
79	690	702	714	736	748	802	797	806	793	777	756	740	714	681	679	687	690
80	707	715	733	750	766	816	807	819	807	790	771	755	728	694	697	701	707
81	727	729	744	765	780	824	820	834	818	803	783	764	741	711	711	715	727
82	740	740	757	777	795	834	833	846	833	813	796	777	754	724	724	730	740
83	758	761	769	793	811	848	847	859	846	827	808	791	771	741	739	742	758
84	773	777	782	808	819	857	860	871	856	841	817	802	786	752	752	758	773
85	789	790	794	822	830	871	870	883	869	852	830	814	797	764	765	772	789
86	800	800	809	833	841	885	882	890	880	865	841	828	810	775	775	787	800
87	811	810	819	847	856	896	895	900	896	878	857	838	823	788	788	799	811
88	820	819	831	859	867	909	906	912	908	892	871	853	838	799	802	812	820
89	827	829	843	872	880	922	919	926	921	906	881	870	851	814	818	824	827
90	832	846	854	879	890	930	930	939	934	918	896	881	864	828	832	835	832
91	841	859	868	887	903	944	942	951	947	930	908	893	875	840	847	850	841
92	856	870	876	904	912	957	958	964	959	940	918	905	886	857	859	862	856

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	866	879	888	914	924	966	969	975	969	951	927	913	900	867	869	876	866
94	879	894	899	928	938	977	980	986	983	966	941	924	910	883	879	885	879
95	887	904	913	941	949	989	992	992	995	975	950	939	918	891	887	901	887
96	895	911	927	951	958	1000	1004	997	1006	991	962	952	931	902	898	911	895
97	900	921	945	960	967	1008	1009	1008	1014	999	976	961	945	912	908	924	900
98	906	931	956	971	978	1014	1017	1016	1022	1010	981	971	955	921	923	935	906
99	919	946	964	981	989	1020	1022	1023	1030	1011	991	980	966	930	934	944	919
100	931	958	971	990	998	1025	1030	1030	1038	1016	997	988	978	939	941	958	931
101	948	971	977	999	1009	1031	1035	1038	1043	1022	1005	998	988	950	953	968	948
102	956	976	988	1007	1016	1036	1045	1045	1051	1026	1018	1006	999	958	958	978	956
103	967	980	994	1015	1024	1043	1053	1052	1058	1028	1033	1013	1010	969	968	984	967
104	970	986	1004	1021	1032	1053	1062	1059	1066	1032	1039	1027	1020	975	975	989	970
105	972	995	1013	1027	1038	1056	1071	1065	1075	1038	1042	1038	1031	983	984	997	972
106	983	1002	1019	1032	1044	1057	1079	1065	1080	1047	1047	1046	1039	989	989	1005	983
107	997	1010	1027	1038	1051	1062	1085	1068	1091	1056	1054	1049	1045	993	997	1017	997
108	1013	1018	1034	1048	1059	1064	1092	1071	1091	1060	1068	1054	1060	1001	1009	1025	1013
109	1019	1024	1039	1049	1062	1069	1094	1075	1089	1057	1078	1061	1075	1005	1016	1030	1019
110	1025	1033	1043	1057	1067	1070	1101	1084	1088	1058	1078	1078	1076	1016	1025	1034	1025
111	1031	1041	1047	1064	1069	1070	1105	1085	1092	1061	1079	1086	1084	1024	1040	1041	1031
112	1037	1047	1061	1069	1071	1074	1108	1085	1099	1076	1082	1086	1086	1028	1050	1048	1037
113	1046	1051	1070	1078	1071	1078	1113	1084	1105	1078	1087	1077	1100	1037	1062	1055	1046
114	1052	1050	1076	1078	1072	1079	1120	1088	1105	1071	1084	1069	1111	1042	1063	1060	1052
115	1059	1049	1078	1076	1079	1079	1124	1089	1104	1059	1081	1071	1119	1046	1069	1064	1059
116	1078	1060	1079	1079	1086	1075	1121	1084	1102	1047	1084	1075	1117	1047	1081	1072	1078
117	1085	1067	1085	1083	1094	1064	1111	1080	1100	1047	1092	1081	1104	1050	1097	1079	1085
118	1084	1067	1089	1088	1096	1060	1095	1076	1099	1048	1095	1079	1088	1061	1117	1082	1084
119	1079	1069	1093	1085	1094	1059	1085	1073	1103	1054	1091	1076	1086	1064	1110	1080	1079
120	1082	1074	1090	1078	1099	1062	1088	1073	1107	1058	1087	1069	1095	1054	1091	1072	1082
121	1087	1074	1087	1068	1099	1064	1090	1077	1098	1051	1085	1066	1101	1050	1075	1068	1087
122	1094	1068	1079	1067	1094	1059	1089	1081	1081	1033	1087	1059	1095	1054	1075	1066	1094
123	1095	1069	1073	1067	1083	1043	1088	1081	1076	1025	1089	1056	1073	1058	1086	1066	1095
124	1091	1076	1068	1068	1080	1032	1080	1073	1074	1022	1090	1060	1045	1064	1096	1065	1091

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	1083	1079	1070	1072	1078	1024	1073	1065	1067	1023	1085	1080	1039	1062	1102	1074	1083
126	1074	1070	1078	1070	1076	1026	1068	1054	1053	1025	1078	1095	1047	1056	1110	1081	1074
127	1077	1060	1087	1067	1071	1032	1074	1046	1042	1018	1071	1095	1055	1037	1111	1073	1077
128	1083	1048	1090	1067	1073	1038	1079	1050	1042	1010	1063	1070	1047	1014	1107	1061	1083
129	1082	1041	1080	1063	1073	1031	1075	1057	1045	1004	1053	1050	1028	1017	1104	1048	1082
130	1062	1034	1067	1055	1063	1010	1064	1052	1031	994	1045	1048	1015	1035	1106	1049	1062
131	1056	1041	1069	1044	1058	1003	1051	1035	1017	989	1035	1054	1003	1038	1124	1058	1056
132	1052	1041	1073	1038	1047	997	1040	1020	1009	992	1029	1048	994	1028	1128	1062	1052
133	1048	1030	1071	1040	1034	1000	1024	997	1014	995	1013	1040	989	1022	1105	1066	1048
134	1057	1023	1066	1046	1032	1001	1024	982	1014	983	1011	1020	992	1013	1089	1067	1057
135	1050	1035	1056	1054	1033	999	1019	982	993	971	1011	1000	1003	1001	1082	1065	1050
136	1039	1047	1049	1058	1027	993	1007	978	966	959	1003	987	1000	995	1077	1061	1039
137	1013	1044	1036	1038	1022	975	997	959	943	936	1002	982	965	1000	1077	1031	1013
138	990	1030	1021	1023	1013	954	984	931	925	931	998	967	938	1000	1073	1016	990
139	991	1011	1017	1018	996	942	969	896	917	924	984	955	920	997	1070	1019	991
140	997	1006	1024	1006	975	924	952	887	912	914	966	932	917	994	1051	1026	997
141	997	989	1023	978	974	905	932	891	901	899	958	894	922	982	1039	1012	997
142	992	985	1012	966	976	895	918	884	887	884	937	876	916	968	1033	975	992
143	979	983	1001	946	967	875	901	835	866	876	916	880	888	955	1038	954	979
144	949	967	991	928	946	853	886	794	845	864	902	879	863	955	1044	941	949
145	932	950	970	914	916	834	875	780	838	854	907	880	848	953	1036	933	932
146	921	936	945	901	902	828	846	786	846	845	902	878	857	938	1019	919	921
147	914	924	921	881	889	810	825	795	829	828	894	844	862	934	991	906	914
148	914	920	905	865	867	792	813	772	804	801	864	815	847	928	982	894	914
149	910	908	894	853	850	772	810	746	774	786	821	803	811	924	956	869	910
150	878	888	882	831	812	750	767	732	770	779	787	810	777	916	948	843	878
151	850	878	872	805	792	731	732	741	762	765	776	807	771	904	938	822	850
152	840	873	859	795	796	722	726	743	715	752	769	753	786	904	926	811	840
153	843	855	831	800	800	687	692	702	664	747	741	699	777	892	897	809	843
154	838	818	805	803	781	658	656	663	639	688	705	669	702	868	875	807	838
155	824	801	807	780	739	654	633	657	631	669	690	658	659	837	867	813	824
156	787	793	819	741	721	641	622	636	581	652	660	656	657	830	861	808	787

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	753	774	789	732	710	589	578	600	530	608	620	618	653	839	841	760	753
158	746	746	755	727	692	556	546	593	527	556	597	586	605	823	793	746	746
159	768	719	724	697	666	558	513	561	509	556	574	592	537	792	755	766	768
160	732	713	713	667	636	494	473	517	466	515	535	573	517	745	759	752	732
161	671	703	687	649	596	462	444	477	461	447	518	541	502	723	729	701	671
162	646	678	629	628	569	446	415	436	428	437	485	510	471	710	653	667	646
163	653	641	602	589	535	387	367	387	414	405	442	489	435	671	642	673	653
164	617	609	564	571	512	311	318	343	383	374	429	438	404	629	647	643	617
165	562	576	524	550	470	273	257	304	364	352	380	405	398	585	620	608	562
166	554	542	499	519	443	207	223	278	340	332	345	377	406	550	588	601	554
167	518	495	475	494	410	147	174	250	295	315	321	343	376	531	555	586	518
168	482	452	436	433	355	126	147	211	265	289	303	315	352	507	527	552	482
169	480	438	394	372	309	116	130	167	231	236	264	297	319	473	476	529	480
170	437	421	355	316	269	69	113	143	191	200	231	261	298	422	478	488	437
171	424	380	313	246	214	61	94	120	134	175	201	225	250	397	436	447	424
172	401	349	280	167	185	42	76	86	112	151	183	180	193	377	400	433	401
173	382	307	244	128	155	22	48	62	93	108	128	157	150	354	388	375	382
174	336	294	189	110	124	12	41	40	47	84	106	113	111	326	327	349	336
175	303	250	161	92	91	11	22	17	29	51	66	72	61	314	295	306	303
176	289	197	116	95	73	8	10	9	13	25	31	40	45	291	257	260	289
177	230	172	103	65	50	10	11	10	9	10	12	19	20	249	225	228	230
178	187	148	90	48	43	37	27	23	32	23	14	8	8	209	161	198	187
179	147	129	59	29	17	69	54	51	65	55	37	13	8	139	113	146	147
180	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72

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 *******