

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-8146M40C-A

Representative (Tested) Model: LED-8146M40C-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

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

1.1 Product Information:

Organization Name	LIGHT EFFICIENT DESIGN, LLC		
Brand Name	N/A		
Model Number	LED-8146M40C-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	4000K		
LED Manufacturer	SAMSUNG ELECTRONICS CO., LTD		
LED Model	SPMWH1228FD5WAT0SE		
Sample Number	GZE1801030-H-AD1		
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-8146M40C-A		

Electrical Measurement:

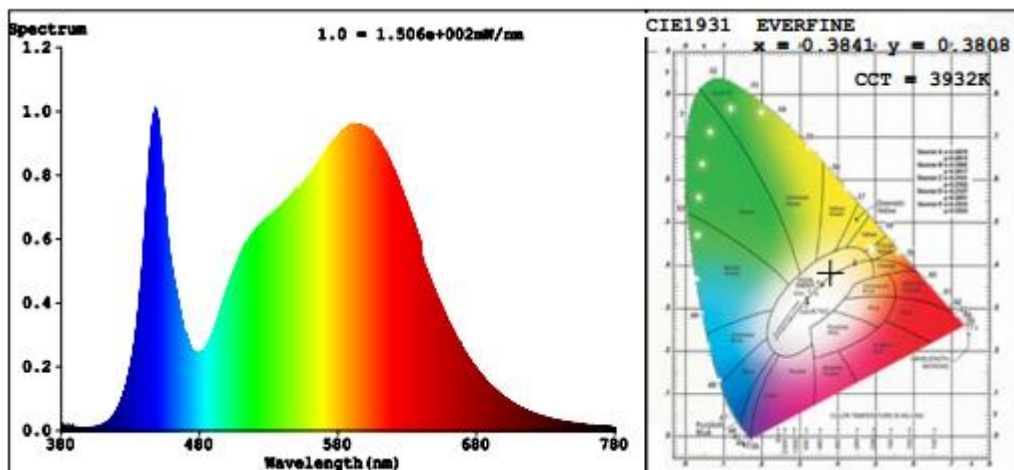
Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE180103	277.0	60	0.2435	64.51	0.9565	12.25
0-H-AD1	347.0	60	0.2073	65.55	0.9111	16.34

Chromaticity Measurement - Sphere-Spectroradiometer Method:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	277.0	R1	79	R9	0
Frequency (Hz)	60	R2	87	R10	70
CCT (K)	3932	R3	94	R11	80
Duv	0.0008	R4	81	R12	63
Chromaticity (x, y)	x=0.3841 y=0.3808	R5	80	R13	81
Chromaticity (u', v')	u'=0.2259 v'=0.5039	R6	83	R14	97
Color Rendering Index (CRI)	81.3	R7	85	R15	72
R9	0	R8	61	--	--

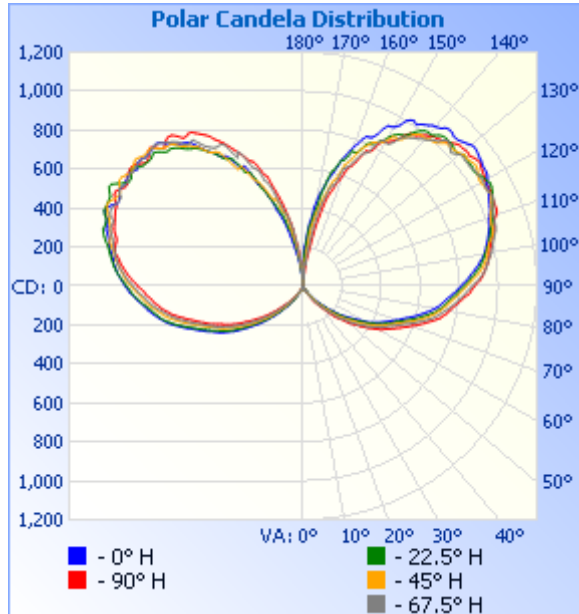
Photometric Measurement – Goniophotometer Method:

Parameter	Result	
Test Voltage (V)	277.0	347.0
Frequency (Hz)	60	60
Total Luminous (lm)	8495.4	8561.5
Luminous Efficacy (lm/W)	131.69	130.61
Most worst Luminous/Highest Watts	129.60	
Beam Angle (°)	324.1	--
Center Beam Candle Power (cd)	4	--

Spectral Power Distribution & Chromaticity Diagram

Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	13.5	0.2%
0-40	59.0	0.7%
0-60	499.1	5.9%
60-90	2,057.2	24.2%
70-100	2,578.0	30.3%
90-120	3,130.5	36.8%
0-90	2,556.3	30.1%
90-180	5,939.4	69.9%
0-180	8,495.7	100%

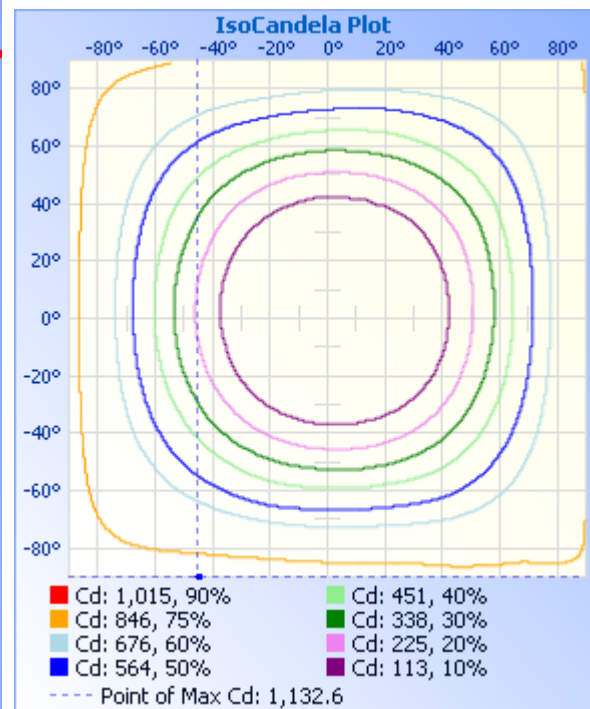
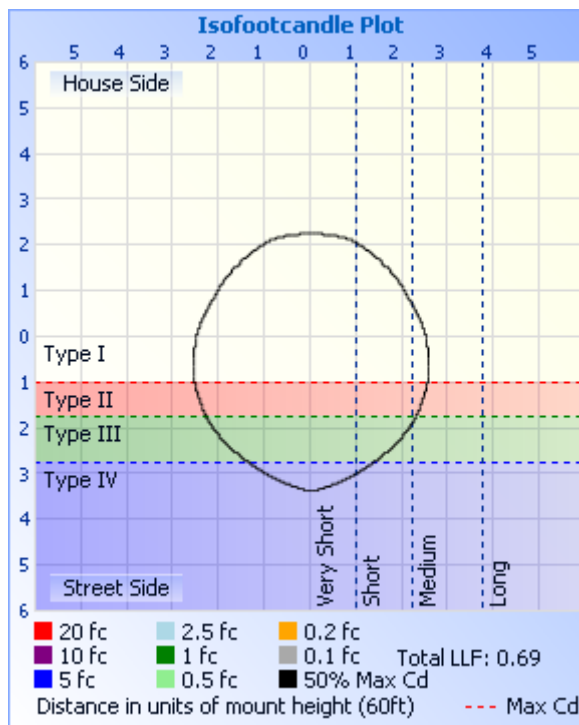
Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	0.5	0.0%	90-100	1,008.3	11.9%
10-20	2.7	0.0%	100-110	1,070.2	12.6%
20-30	10.4	0.1%	110-120	1,052.0	12.4%
30-40	45.5	0.5%	120-130	954.5	11.2%
40-50	141.5	1.7%	130-140	792.5	9.3%
50-60	298.6	3.5%	140-150	573.1	6.7%
60-70	487.5	5.7%	150-160	338.0	4%
70-80	695.7	8.2%	160-170	132.2	1.6%
80-90	874.0	10.3%	170-180	18.6	0.2%

Photometric Data


Illuminance at a Distance

	Center Beam fc	Beam Width
10.0ft	0.04 fc	21.1 ft
20.0ft	0.01 fc	42.2 ft
30.0ft	0.00 fc	63.3 ft
40.0ft	0.00 fc	84.5 ft
50.0ft	0.00 fc	105.6 ft
60.0ft	0.00 fc	126.7 ft

■ Beam Spread: 93.1°



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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	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	5	5	5	5	4	4	4	4	4	4	4	4
5	4	4	4	4	5	5	5	5	5	5	4	4	4	4	4	4	4
6	4	4	4	5	5	5	5	5	5	5	5	4	4	4	4	4	4
7	4	4	4	5	5	6	6	6	5	5	5	4	4	4	4	4	4
8	4	4	5	5	5	6	6	6	6	6	5	5	4	4	4	4	4
9	4	4	5	5	6	6	7	7	6	6	5	5	4	4	4	4	4
10	4	5	5	6	6	7	7	7	7	6	6	5	5	4	4	4	4
11	4	5	6	6	7	8	8	8	8	7	6	5	5	5	4	4	4
12	5	5	6	7	8	9	9	9	8	8	7	6	5	5	4	4	5
13	5	6	7	8	9	9	10	10	9	8	7	6	6	5	5	5	5
14	5	6	7	8	10	10	11	11	10	9	8	7	6	5	5	5	5
15	6	7	8	9	10	11	12	12	11	10	9	7	7	6	5	5	6
16	7	8	9	10	12	13	13	13	12	11	10	8	7	6	6	6	7
17	7	9	10	11	13	14	15	14	14	12	11	9	8	7	6	6	7
18	8	10	11	13	14	15	17	16	15	13	12	10	9	8	7	7	8
19	9	11	12	14	15	16	18	17	16	15	13	11	10	9	8	8	9
20	10	12	14	15	17	18	19	18	18	16	14	12	10	9	9	9	10
21	11	13	15	17	19	20	21	20	19	17	15	13	12	10	10	10	11
22	12	15	17	18	20	21	23	22	21	18	17	14	13	12	11	11	12
23	13	16	18	20	22	23	25	23	23	20	18	16	14	13	12	12	13
24	15	18	20	21	23	25	27	25	25	22	19	17	15	14	13	13	15
25	16	19	21	23	25	27	29	28	27	24	21	19	17	16	15	15	16
26	17	21	23	25	27	29	31	30	29	26	23	20	18	17	16	17	17
27	19	22	25	26	29	30	33	32	31	28	25	22	20	18	18	18	19
28	21	24	27	28	31	33	36	34	33	30	27	24	22	20	19	20	21

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29	23	26	28	30	33	38	42	42	39	33	29	26	24	22	21	21	23
30	25	27	30	32	37	46	53	54	48	37	31	29	25	23	23	23	25
31	27	29	33	35	45	55	66	64	57	49	38	31	28	25	25	25	27
32	29	31	35	46	56	67	75	74	68	63	49	33	29	28	27	27	29
33	31	33	42	56	67	81	84	84	80	75	57	41	32	29	30	30	31
34	33	37	52	66	77	91	93	92	89	83	65	51	39	33	31	32	33
35	37	45	60	77	87	99	101	101	97	88	73	62	46	37	34	34	37
36	46	55	70	82	97	109	110	110	108	97	83	72	56	43	39	37	46
37	56	64	82	90	101	116	122	123	116	111	93	80	66	55	47	46	56
38	68	76	88	104	117	126	132	131	129	117	103	85	75	66	56	59	68
39	76	88	99	111	125	143	146	146	140	131	114	95	84	74	71	71	76
40	86	97	108	123	137	152	156	154	152	140	120	108	94	86	80	83	86
41	95	107	114	135	146	169	169	169	166	153	136	115	101	95	90	89	95
42	105	118	131	147	161	177	186	186	179	168	149	127	114	100	95	98	105
43	114	125	138	156	175	192	200	198	193	182	158	140	124	114	104	117	114
44	126	137	153	176	188	212	212	216	212	192	175	155	136	126	117	118	126
45	136	147	164	187	203	223	232	234	224	207	190	169	147	135	126	135	136
46	147	160	176	196	222	238	254	250	238	227	204	180	160	147	137	143	147
47	161	178	190	217	235	257	267	260	254	242	223	196	175	158	158	159	161
48	173	188	206	238	248	275	276	274	271	258	237	210	191	171	165	164	173
49	191	201	224	251	261	286	293	289	290	269	252	229	204	186	183	179	191
50	204	219	241	262	279	297	308	307	303	284	264	247	222	197	197	195	204
51	218	229	253	272	295	314	327	325	319	300	281	256	236	213	207	211	218
52	238	247	267	286	311	331	342	339	334	319	296	274	250	226	222	226	238
53	251	267	285	308	326	350	360	356	353	333	316	292	271	241	246	244	251
54	262	280	297	324	338	366	378	374	370	351	332	307	281	258	260	258	262
55	274	293	309	342	359	388	395	390	389	372	347	322	296	272	269	271	274
56	293	304	326	356	375	409	412	406	408	392	361	341	313	287	280	280	293
57	305	324	349	369	392	425	432	425	427	407	378	359	329	298	298	293	305
58	322	339	364	389	406	440	451	441	441	426	394	376	344	317	317	317	322
59	339	356	381	403	425	456	467	455	458	443	413	391	365	330	330	333	339
60	358	372	394	419	440	471	479	473	476	462	428	410	386	351	347	349	358

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61	382	395	413	432	459	482	494	488	491	474	446	428	402	368	361	361	382
62	396	409	429	448	471	496	506	502	503	488	463	442	417	389	380	377	396
63	412	428	443	461	486	509	521	515	516	504	477	459	433	405	396	395	412
64	423	441	460	474	500	526	533	530	531	521	487	476	449	421	412	413	423
65	440	457	470	486	514	539	550	542	548	532	501	492	461	439	429	426	440
66	452	468	485	502	528	557	566	559	563	549	517	504	480	449	447	441	452
67	466	487	498	515	545	577	580	573	579	565	534	518	498	463	460	453	466
68	478	499	513	532	562	592	600	593	596	583	548	534	517	477	476	468	478
69	493	509	528	547	580	611	622	616	611	598	565	551	530	496	486	480	493
70	510	527	548	567	594	633	646	636	631	619	582	566	545	510	499	494	510
71	527	544	563	584	616	654	664	659	652	640	598	585	563	527	513	505	527
72	539	565	584	606	632	671	687	679	668	658	619	604	577	539	528	522	539
73	559	582	602	624	652	689	709	699	689	678	639	619	595	559	543	536	559
74	575	605	623	648	667	707	724	716	706	697	658	639	616	575	563	555	575
75	595	621	639	664	689	719	740	734	724	713	676	660	633	596	576	572	595
76	610	637	660	684	706	732	754	751	737	731	697	676	653	612	594	592	610
77	631	656	673	697	724	742	770	763	752	745	714	693	673	635	610	609	631
78	647	674	690	713	734	751	779	777	765	757	728	708	693	651	632	631	647
79	665	693	701	723	748	759	790	788	777	767	740	724	703	669	650	645	665
80	680	705	716	738	757	771	802	798	791	779	755	737	720	687	671	666	680
81	695	719	727	752	768	784	815	815	803	788	768	754	736	708	685	684	695
82	710	728	740	766	777	798	828	828	812	803	782	770	746	721	702	702	710
83	719	740	750	777	790	815	837	837	825	818	797	783	760	734	718	712	719
84	731	748	763	791	802	827	846	850	838	833	808	795	773	748	730	727	731
85	741	762	774	802	816	836	860	862	851	844	820	807	782	757	742	737	741
86	756	774	788	817	828	850	876	873	864	859	833	818	795	771	752	752	756
87	769	787	800	828	847	867	889	888	876	873	843	834	808	784	766	763	769
88	786	797	811	840	859	883	904	904	892	883	857	848	817	799	777	776	786
89	796	813	826	854	868	893	920	919	901	893	871	858	833	810	785	787	796
90	809	825	838	866	880	911	932	929	914	907	884	873	848	821	797	796	809
91	823	842	854	884	893	921	945	939	923	918	897	886	861	833	812	812	823
92	838	855	865	899	910	929	958	949	934	930	909	900	877	842	825	825	838

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93	853	866	884	914	920	935	972	958	944	943	919	913	892	853	841	842	853
94	864	882	900	928	928	941	981	967	956	956	929	925	905	865	855	851	864
95	880	895	914	939	936	948	992	979	964	965	939	938	918	878	866	867	880
96	892	910	927	947	945	955	998	989	971	976	951	948	931	891	882	879	892
97	907	920	936	952	954	969	1005	1002	982	984	960	959	945	909	891	889	907
98	918	931	946	962	960	977	1010	1011	984	993	971	967	952	920	908	904	918
99	933	940	954	970	968	987	1018	1020	993	1001	979	974	965	934	919	916	933
100	943	947	961	981	969	992	1024	1030	1001	1010	985	981	978	943	932	931	943
101	952	959	965	987	976	995	1030	1034	1011	1017	996	987	984	950	940	943	952
102	959	967	972	995	981	1001	1035	1040	1017	1028	1010	995	986	959	946	955	959
103	967	977	978	1001	989	1006	1039	1045	1023	1042	1019	1000	985	963	960	962	967
104	976	986	994	1009	996	1015	1045	1046	1029	1051	1019	1008	986	973	970	969	976
105	983	992	1006	1018	1008	1022	1051	1054	1038	1062	1022	1018	995	980	978	976	983
106	989	999	1015	1027	1019	1029	1059	1071	1051	1068	1032	1029	1007	992	985	984	989
107	999	1005	1018	1033	1024	1031	1068	1073	1054	1064	1036	1034	1014	1003	994	996	999
108	1006	1017	1016	1036	1031	1034	1072	1069	1061	1063	1043	1031	1018	1012	1004	999	1006
109	1012	1025	1019	1038	1038	1037	1075	1067	1064	1068	1053	1029	1023	1020	1011	1008	1012
110	1016	1036	1023	1040	1051	1040	1077	1068	1082	1085	1064	1053	1029	1023	1014	1019	1016
111	1025	1044	1029	1044	1066	1037	1080	1068	1091	1093	1076	1062	1034	1027	1016	1025	1025
112	1035	1049	1042	1053	1069	1036	1079	1074	1083	1092	1089	1061	1040	1030	1022	1029	1035
113	1041	1057	1051	1062	1069	1035	1079	1076	1066	1091	1088	1057	1041	1032	1029	1032	1041
114	1047	1061	1057	1069	1070	1031	1076	1073	1044	1090	1081	1046	1051	1042	1032	1034	1047
115	1053	1074	1066	1077	1073	1031	1068	1069	1040	1092	1063	1042	1066	1050	1036	1044	1053
116	1063	1082	1074	1077	1075	1029	1065	1066	1049	1106	1055	1040	1079	1049	1040	1045	1063
117	1067	1088	1068	1067	1081	1034	1064	1066	1059	1118	1055	1057	1077	1049	1051	1051	1067
118	1072	1095	1063	1063	1080	1034	1067	1070	1064	1115	1066	1070	1063	1047	1061	1065	1072
119	1080	1095	1061	1066	1077	1027	1068	1076	1059	1087	1078	1056	1046	1058	1065	1069	1080
120	1091	1088	1056	1070	1079	1024	1074	1081	1052	1058	1089	1049	1041	1068	1068	1077	1091
121	1104	1081	1057	1070	1087	1027	1080	1078	1059	1042	1086	1050	1055	1074	1075	1079	1104
122	1108	1072	1059	1065	1091	1027	1080	1074	1059	1041	1074	1057	1064	1078	1076	1070	1108
123	1109	1061	1068	1066	1094	1027	1071	1077	1062	1051	1059	1061	1068	1070	1071	1066	1109
124	1110	1056	1078	1064	1100	1027	1060	1086	1056	1067	1057	1051	1073	1058	1064	1066	1110

Laboratory: Standard-Tech Co., Ltd Testing Center

NVLAP CODE: 201011-0

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125	1117	1062	1082	1055	1108	1028	1052	1089	1043	1061	1067	1053	1072	1050	1057	1063	1117
126	1120	1062	1077	1053	1104	1027	1041	1083	1053	1042	1072	1055	1065	1055	1057	1062	1120
127	1125	1063	1069	1054	1096	1019	1037	1069	1059	1028	1079	1056	1045	1070	1061	1067	1125
128	1130	1063	1066	1052	1085	1001	1026	1053	1058	1025	1072	1052	1028	1083	1072	1067	1130
129	1133	1066	1068	1055	1088	989	1014	1037	1046	1020	1059	1048	1027	1080	1081	1072	1133
130	1128	1054	1057	1052	1087	984	1010	1038	1043	1018	1057	1041	1034	1052	1085	1071	1128
131	1116	1045	1049	1035	1082	977	1021	1047	1044	1024	1055	1046	1052	1022	1084	1070	1116
132	1106	1044	1045	1023	1082	973	1026	1057	1044	1027	1057	1048	1061	1005	1079	1069	1106
133	1095	1052	1039	1032	1072	967	1017	1051	1047	1011	1042	1053	1048	1007	1071	1061	1095
134	1090	1057	1040	1046	1058	959	985	1035	1052	990	1017	1049	1017	1021	1066	1048	1090
135	1091	1054	1040	1054	1044	938	964	1007	1043	979	1007	1039	1006	1039	1067	1039	1091
136	1098	1056	1023	1043	1037	922	949	998	1020	980	998	1023	1020	1044	1067	1035	1098
137	1100	1053	1006	1017	1030	908	941	988	1002	969	998	1009	1029	1026	1067	1030	1100
138	1093	1043	998	1008	1023	900	940	979	983	957	977	999	1033	995	1069	1033	1093
139	1074	1025	999	995	1019	880	931	965	967	935	953	980	1026	977	1052	1036	1074
140	1066	1015	989	982	1007	864	914	947	958	919	936	952	1005	976	1027	1028	1066
141	1061	1019	982	972	996	842	882	934	948	908	930	934	978	984	1013	1011	1061
142	1047	1012	986	958	982	838	871	916	933	898	906	939	975	991	1017	998	1047
143	1038	997	977	953	968	817	878	891	900	882	897	940	981	983	1026	996	1038
144	1026	980	961	942	960	795	889	885	869	862	866	906	977	968	1021	997	1026
145	1012	953	936	932	957	778	865	877	842	841	840	877	959	947	1003	995	1012
146	1021	931	910	922	935	768	812	847	829	825	828	860	943	937	977	982	1021
147	1018	927	898	901	904	767	778	820	803	802	823	847	925	925	956	959	1018
148	1001	919	899	869	882	753	772	790	780	777	808	839	907	915	956	937	1001
149	963	904	893	851	867	727	765	802	780	760	768	841	879	919	962	924	963
150	943	886	867	849	854	708	726	787	761	756	718	842	858	910	961	923	943
151	934	856	844	859	849	686	664	729	731	745	685	828	838	894	946	920	934
152	934	843	835	843	829	669	647	679	696	706	690	775	814	873	930	905	934
153	909	827	829	810	782	652	619	668	676	655	689	741	787	850	905	887	909
154	865	815	822	763	767	630	578	636	687	651	646	768	765	838	888	873	865
155	843	810	802	755	768	603	544	566	641	644	609	748	744	850	875	874	843
156	836	798	786	743	730	583	529	530	573	601	590	700	720	834	865	871	836

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157	836	764	765	711	692	566	477	514	564	547	579	662	697	801	854	842	836
158	813	739	735	687	667	517	456	481	541	527	552	650	691	758	808	816	813
159	784	737	698	658	653	479	440	466	492	497	525	635	667	726	761	799	784
160	762	739	676	646	617	459	398	418	468	467	492	577	628	743	734	781	762
161	733	706	660	638	578	417	386	386	411	444	472	560	603	734	731	753	733
162	704	680	614	579	557	384	324	354	389	418	465	536	589	695	709	724	704
163	679	678	575	540	518	292	272	310	365	393	468	496	538	653	655	697	679
164	640	648	566	539	496	256	244	282	338	383	419	450	504	637	624	666	640
165	608	619	532	517	467	204	208	256	298	346	392	429	470	625	613	646	608
166	579	607	491	471	421	149	176	246	265	306	387	396	437	580	595	630	579
167	557	569	474	441	366	85	130	214	228	300	361	378	398	555	573	588	557
168	525	516	437	406	323	82	115	195	200	272	306	354	365	524	531	554	525
169	500	483	406	356	274	78	121	138	165	228	263	320	330	495	493	512	500
170	472	417	377	303	211	59	95	101	158	203	238	298	296	465	467	480	472
171	436	388	341	242	176	45	65	71	133	168	208	246	247	437	447	460	436
172	409	366	315	197	156	29	43	56	97	133	166	189	217	413	419	426	409
173	354	318	276	168	130	21	26	43	70	104	143	137	186	383	390	404	354
174	330	312	205	123	105	17	20	32	54	76	102	109	134	358	378	381	330
175	293	268	167	107	67	11	11	17	24	44	65	82	103	338	348	347	293
176	248	225	139	122	54	9	8	9	11	17	27	51	69	317	319	324	248
177	212	180	107	76	26	17	18	22	16	10	11	18	38	277	268	292	212
178	205	162	102	39	27	42	57	60	57	38	14	8	9	248	241	243	205
179	170	117	85	40	16	78	83	107	99	65	41	11	7	177	175	194	170
180	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86

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 *******