



NVLAP LAB CODE 201011-0

Report No.: GZE150818-F2

LM-79-08 Test Report

For

Premium Quality Lighting, Inc.

(Brand Name: Superior Life®)

2285 Ward Avenue
Simi Valley, CA 93065

Retrofit Kits for Outdoor Pole/Arm-mounted Area and Roadway Luminaires

Model name(s): 83460

Representative (Tested) Model: 83460

Model Different: N/A

Test & Report By:

Peeta Cao

Engineer: Peeta Cao

Date: Sep.09,2015

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: 8th floor, Block B, No. 11 Caipin Road, Guangzhou Science City, Tianhe, Guangzhou 510663, China

Tel: 8620-3229 0320

Fax: 8620-32290422

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

U.S. Department of Energy

Lighting Facts™ Uniform LM-79 Reporting Template
Laboratory Information:

Name of Test Laboratory	Standard-Tech Co., Ltd.
Date of Test Report	Sep.09,2015
Test Report No.	GZE150818-F2
Laboratory Contact Name	Tommy Liang

Product Information:

Organization Name	Premium Quality Lighting	
Brand Name	Superior Life®	
Model Number	83460	
SKU (if available)	N/A	
Type of Luminaire (for integral lamps, list base type and lamp type)	Retrofit Kits for Outdoor Pole/Arm-mounted Area and Roadway Luminaires	
Luminaire Aperture (for downlights)	--	in.
Luminaire Length	--	mm
Luminaires Width	--	mm
Number of Units (modular products)	N/A	s

Integrating Sphere
Goniophotometer
Electrical Measurements:
Output
Output

Input Wattage	--	105.5	W
Input Current	--	0.8852	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9932	
Off-State Power	--	0	W

Photometric Characteristics

Total Initial Lumen Output	--	14538	lm
Initial Lumen Efficacy	--	137.80	lm/w
Correlated color temperature / CCT	4983	--	K
Color rendering index / CRI	75.2	--	
R9 Value	0	--	
Duv	0.0040	--	
Luminous Intensity Distribution			
Center beam candlepower (if applicable)		5153	cd
Beam angle (if applicable)		114.1	°
Zonal lumens in the 0°-60° zone		81.5	%
Zonal lumens in the 60°-90° zone	-----	18.3	%
Zonal lumens in the 90°-120° zone		0.1	%
Zonal lumens in the 120°-180° zone		0.1	%

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Test Specifications:	
Date of Receipt	: Aug.08,2015
Date of Test	: Aug.15,2015
Test item	: Total Luminous Flux, Luminous Distribution Intensity, Luminous Efficacy, Correlated Color Temperature, Color Rendering Index, Chromaticity Coordinate, Electrical parameters
Reference Standard	IES LM-79-2008 Electrical and Photometric Measurements of Solid-State Lighting Products ANSI C78.377-2008 Specifications for the Chromaticity of Solid State Lighting Products CIE 13.3-1995 Method of Measuring and Specifying Colour Rendering Properties of Light Sources CIE 15-2004 Technical Report Colorimetry IESNA LM-16-93 Practical Guide to Colorimetry of Light Source IESNA TM-16-05 Technical Memorandum on Light Emitting Diode (LED) Sources and Systems
Reference Work Instruction	QD25

Test Methods

1. Photometric and Electrical measurements – Light Distribution Method:

Photometric parameters were measured using the goniophotometer and software. The ambient temperature shall be maintained at $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$, 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 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. Photometric and Electrical Measurements – Integrating Sphere Method:

Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. 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 Volts AC, 60Hz. It was stabilized before measurement was made. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at least 5 nm intervals over the range of 380 to 780 nm.

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1. Product Information:

Brand Name	Superior Life®
Model Number	83460
Luminaire Type	Retrofit Kits for Outdoor Pole/Arm-mounted Area and Roadway Luminaires
Rated Voltage / Frequency	100~ 277V, 50/60 Hz
Nominal Power	105W
Rated Initial Lamp Lumen	--
Declared CCT	5000K
LED Manufacturer	Nichia Corporation
LED Model	NF2L757DR (Nominal CCT: 2700 K)
Sample Receipt Date	Aug.08,2015
Sample Number	GZE150818-F21(5000K)

Photo



2.1 Electrical, Photometric and Chromaticity Measurements (Refer to Work Instruction QD25)	IES LM-79 2008
------------------------------------------------------------------------------------------------------	-----------------------

Test date	2015-08-15	Test Ambient:	25.2 °C
Test Orientation	As intended	Stabilization Time (min)	90
Model Number	83460		

Electrical Measurement:

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150818	120.0	60	0.8852	105.5	0.9932	7.63
-F21	277.0	60	0.4199	106.3	0.9139	10.49

Sphere-Spectroradiometer Method in GE M250R2 Roadway Lamp:

Parameter	Result	Special Color Rendering Indices			
Test Voltage (V)	120.0	R1	72	R9	0
Frequency (Hz)	60	R2	81	R10	52
Color Rendering Index (CRI)	75.2	R3	85	R11	69
R9	0	R4	74	R12	39
CCT (K)	4983	R5	72	R13	74
Chromaticity (x, y)	x=0.3464y=0.3608	R6	72	R14	92
Chromaticity (u', v')	u'=0.2087v'=0.4893	R7	85	R15	67
Duv	0.0040	R8	60	--	--

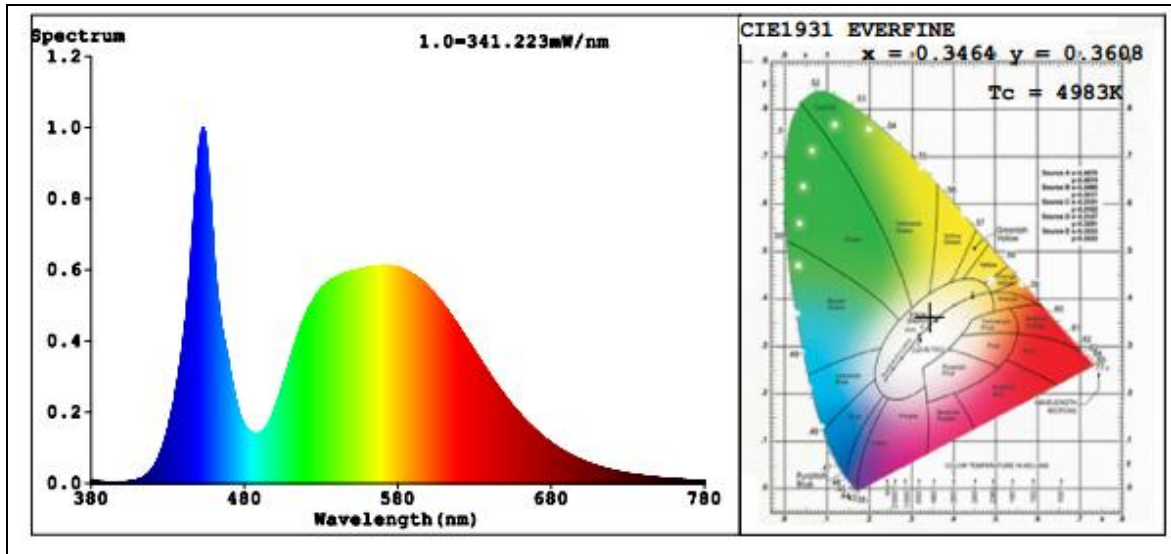
Goniophotometer Method in GE M250R2 Roadway Lamp:

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	14538
Luminous Efficacy (lm/W)	137.80
Beam Angle °	114.1
Center Beam Candle Power (cd)	5153

Goniophotometer Method in GE M250R2 Roadway Lamp:

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	14547
Luminous Efficacy (lm/W)	136.85

Spectral Power Distribution & Chromaticity Diagram



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Zonal Lumen Tabulation

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	4,032.9	27.7%
0-40	6,651.0	45.8%
0-60	11,848.3	81.5%
60-90	2,657.4	18.3%
70-100	903.7	6.2%
90-120	7.7	0.1%
0-90	14,505.7	99.8%
90-180	30.6	0.2%
0-180	14,536.3	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	486.8	3.3%	90-100	1.2	0%
10-20	1,400.4	9.6%	100-110	2.8	0%
20-30	2,145.6	14.8%	110-120	3.7	0%
30-40	2,618.2	18.0%	120-130	4.6	0%
40-50	2,741.4	18.9%	130-140	5.2	0%
50-60	2,455.8	16.9%	140-150	4.9	0%
60-70	1,754.9	12.1%	150-160	4.2	0%
70-80	807.3	5.6%	160-170	2.8	0%
80-90	95.3	0.7%	170-180	1.1	0%

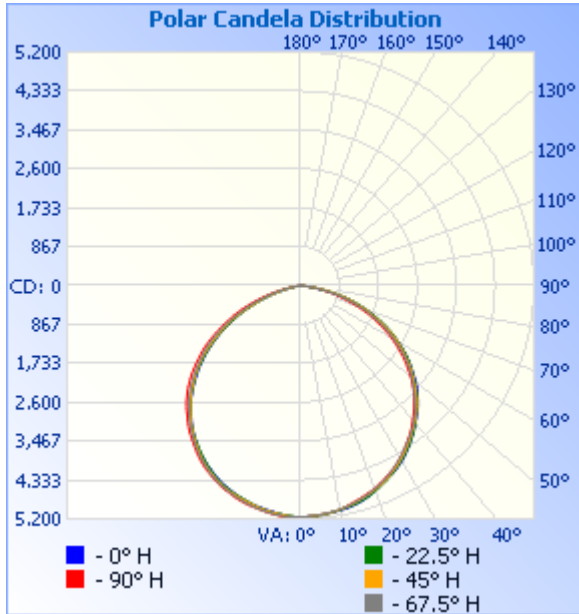
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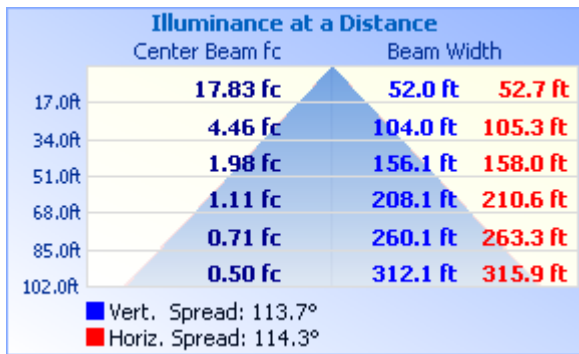
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Photometric Data



Illuminance Plots



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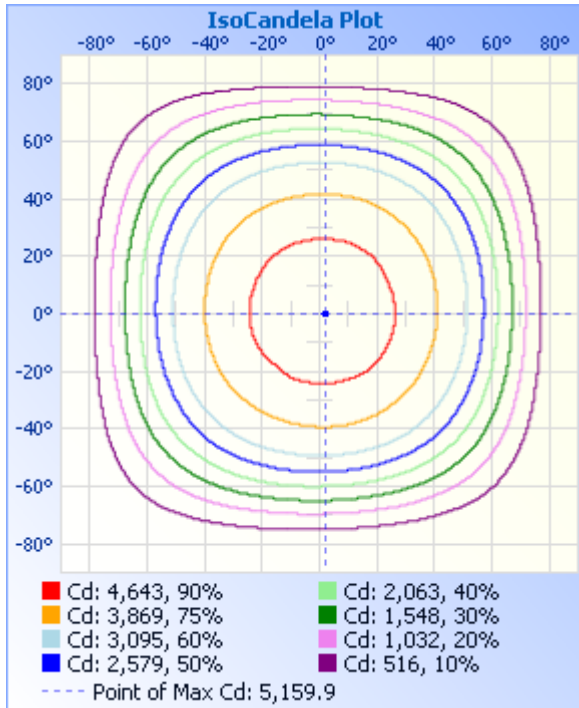
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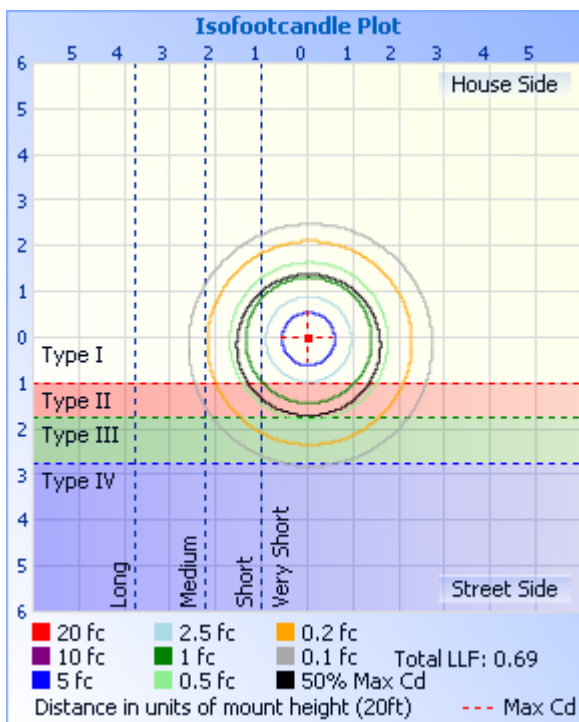
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ISOCANDELA DIAGRAM



ISOLUX DIAGRAM



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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	5153	5153	5153	5153	5153	5153	5153	5153	5153	5153	5153	5153	5153	5153	5153	5153	5153
1	5148	5148	5149	5151	5148	5149	5146	5149	5151	5149	5152	5156	5156	5150	5151	5156	5148
2	5143	5145	5140	5146	5146	5141	5138	5139	5146	5141	5147	5153	5157	5145	5146	5158	5143
3	5135	5142	5137	5140	5144	5129	5126	5128	5138	5131	5138	5151	5160	5142	5142	5152	5135
4	5126	5138	5129	5132	5138	5114	5112	5115	5125	5118	5128	5149	5157	5138	5135	5147	5126
5	5121	5134	5118	5122	5130	5099	5095	5100	5110	5108	5116	5140	5148	5137	5128	5137	5121
6	5113	5125	5111	5111	5120	5087	5078	5088	5094	5099	5103	5130	5137	5133	5122	5128	5113
7	5104	5110	5103	5101	5109	5072	5065	5079	5076	5089	5090	5120	5123	5122	5114	5118	5104
8	5095	5097	5092	5087	5096	5055	5054	5066	5058	5076	5075	5104	5109	5106	5105	5107	5095
9	5087	5087	5077	5075	5082	5035	5042	5054	5044	5056	5060	5090	5092	5091	5098	5093	5087
10	5081	5074	5061	5057	5062	5019	5027	5040	5027	5037	5041	5072	5074	5074	5086	5078	5081
11	5072	5059	5045	5039	5042	5001	5011	5019	5011	5016	5022	5052	5058	5054	5074	5065	5072
12	5061	5044	5031	5020	5015	4982	4993	4996	4993	4991	5001	5035	5041	5036	5055	5050	5061
13	5046	5033	5010	5000	4990	4965	4973	4970	4971	4966	4981	5016	5026	5021	5035	5031	5046
14	5029	5019	4989	4976	4963	4947	4946	4945	4950	4940	4959	4996	5008	5007	5010	5010	5029
15	5010	4999	4965	4953	4939	4930	4918	4919	4927	4917	4938	4972	4988	4992	4986	4986	5010
16	4988	4978	4937	4929	4915	4911	4890	4890	4903	4894	4917	4948	4965	4971	4963	4964	4988
17	4960	4955	4914	4905	4888	4888	4863	4860	4873	4873	4895	4923	4940	4947	4939	4939	4960
18	4927	4930	4888	4879	4861	4859	4834	4829	4842	4849	4871	4895	4913	4921	4916	4913	4927
19	4895	4899	4863	4848	4837	4827	4802	4797	4813	4822	4846	4865	4883	4895	4890	4886	4895
20	4859	4867	4837	4820	4810	4797	4765	4765	4784	4794	4821	4838	4854	4863	4864	4857	4859
21	4824	4833	4809	4788	4779	4768	4725	4733	4753	4764	4791	4811	4826	4829	4834	4831	4824
22	4789	4797	4784	4757	4746	4736	4688	4701	4718	4729	4756	4781	4795	4792	4802	4804	4789
23	4755	4764	4751	4723	4708	4698	4653	4674	4680	4692	4721	4745	4759	4756	4769	4770	4755
24	4721	4732	4716	4686	4674	4660	4620	4640	4640	4653	4684	4709	4721	4718	4738	4738	4721
25	4693	4697	4678	4648	4639	4620	4585	4606	4599	4608	4647	4666	4685	4680	4704	4707	4693
26	4662	4661	4637	4608	4601	4576	4550	4569	4558	4564	4607	4624	4648	4642	4672	4678	4662
27	4628	4620	4598	4565	4563	4532	4508	4529	4518	4524	4564	4579	4607	4601	4634	4645	4628
28	4589	4582	4554	4520	4520	4492	4462	4485	4479	4478	4515	4536	4566	4558	4596	4610	4589

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29	4553	4538	4511	4474	4477	4449	4413	4435	4436	4429	4466	4488	4518	4516	4555	4572	4553
30	4513	4497	4462	4429	4429	4401	4363	4379	4385	4380	4414	4439	4472	4473	4514	4526	4513
31	4466	4453	4415	4381	4382	4355	4315	4325	4337	4325	4362	4389	4422	4431	4469	4479	4466
32	4417	4403	4369	4329	4332	4306	4268	4268	4280	4270	4304	4332	4370	4388	4423	4433	4417
33	4364	4354	4320	4282	4279	4255	4218	4207	4225	4218	4247	4278	4316	4340	4375	4381	4364
34	4311	4306	4272	4238	4226	4206	4165	4145	4169	4166	4192	4222	4260	4295	4326	4331	4311
35	4259	4256	4221	4186	4171	4155	4106	4083	4111	4110	4134	4162	4204	4244	4272	4287	4259
36	4204	4203	4168	4141	4126	4100	4046	4023	4055	4057	4074	4099	4151	4194	4219	4239	4204
37	4150	4152	4114	4092	4074	4037	3984	3965	3994	4000	4009	4039	4099	4138	4163	4187	4150
38	4093	4097	4063	4045	4015	3972	3925	3902	3930	3942	3944	3978	4043	4080	4106	4127	4093
39	4036	4038	4011	3988	3953	3908	3866	3839	3862	3876	3873	3914	3981	4021	4044	4066	4036
40	3981	3977	3958	3930	3892	3840	3801	3773	3792	3808	3807	3847	3917	3954	3978	4005	3981
41	3925	3916	3904	3872	3831	3771	3734	3710	3729	3736	3739	3780	3851	3887	3914	3942	3925
42	3871	3852	3849	3807	3766	3700	3674	3644	3661	3666	3670	3713	3788	3818	3848	3878	3871
43	3812	3792	3791	3741	3708	3626	3609	3574	3587	3593	3599	3648	3727	3750	3782	3816	3812
44	3758	3735	3735	3670	3646	3554	3543	3507	3514	3520	3528	3579	3663	3686	3713	3751	3758
45	3696	3670	3667	3600	3582	3484	3476	3431	3428	3437	3450	3506	3591	3613	3647	3688	3696
46	3629	3607	3596	3528	3513	3418	3396	3354	3343	3355	3371	3426	3519	3545	3580	3615	3629
47	3562	3540	3520	3457	3439	3352	3316	3278	3258	3272	3293	3345	3446	3471	3510	3543	3562
48	3494	3466	3444	3389	3365	3287	3236	3196	3169	3186	3208	3264	3366	3401	3441	3465	3494
49	3427	3393	3369	3320	3290	3216	3150	3111	3079	3103	3130	3181	3284	3321	3369	3387	3427
50	3351	3318	3295	3252	3217	3145	3065	3024	2996	3020	3045	3090	3203	3245	3295	3308	3351
51	3267	3242	3222	3179	3137	3070	2977	2939	2909	2933	2958	3002	3116	3162	3218	3234	3267
52	3186	3168	3146	3105	3052	2988	2893	2851	2823	2838	2871	2911	3023	3078	3140	3170	3186
53	3107	3094	3074	3026	2969	2898	2810	2764	2731	2742	2784	2822	2928	2994	3060	3099	3107
54	3028	3019	2994	2947	2885	2799	2727	2664	2632	2639	2690	2731	2836	2909	2976	3023	3028
55	2944	2943	2906	2868	2802	2699	2640	2564	2530	2538	2589	2648	2747	2825	2891	2945	2944
56	2863	2863	2824	2786	2711	2600	2547	2463	2427	2435	2488	2562	2659	2737	2805	2861	2863
57	2780	2779	2745	2697	2622	2504	2448	2373	2324	2336	2384	2469	2566	2645	2717	2771	2780
58	2693	2688	2665	2603	2532	2415	2347	2277	2224	2233	2277	2375	2468	2549	2622	2674	2693
59	2602	2598	2580	2508	2442	2321	2250	2182	2120	2132	2171	2272	2363	2449	2519	2583	2602
60	2514	2512	2498	2417	2348	2235	2154	2081	2016	2023	2062	2167	2256	2352	2413	2485	2514

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61	2418	2428	2406	2328	2257	2141	2044	1973	1911	1906	1956	2057	2146	2250	2314	2384	2418
62	2330	2340	2315	2236	2160	2051	1935	1861	1800	1793	1860	1945	2034	2150	2224	2289	2330
63	2234	2251	2222	2145	2058	1957	1832	1754	1696	1688	1760	1829	1926	2046	2137	2192	2234
64	2137	2160	2121	2047	1954	1862	1733	1642	1599	1589	1649	1719	1824	1937	2039	2094	2137
65	2040	2059	2016	1943	1857	1756	1635	1536	1493	1481	1534	1614	1723	1831	1938	1997	2040
66	1941	1962	1912	1840	1765	1651	1529	1441	1379	1373	1418	1510	1623	1723	1832	1908	1941
67	1844	1859	1808	1745	1666	1550	1424	1334	1270	1264	1300	1392	1519	1616	1729	1805	1844
68	1743	1757	1716	1649	1563	1451	1317	1217	1164	1147	1178	1287	1408	1509	1625	1699	1743
69	1642	1656	1625	1553	1459	1344	1218	1115	1058	1040	1066	1178	1300	1404	1522	1592	1642
70	1541	1554	1525	1455	1356	1233	1108	1006	952	935	970	1073	1188	1304	1415	1488	1541
71	1440	1453	1421	1354	1244	1125	1001	902	850	834	874	961	1077	1203	1309	1386	1440
72	1338	1358	1320	1247	1147	1023	895	805	750	739	775	854	969	1096	1203	1287	1338
73	1236	1249	1225	1139	1049	916	805	709	655	647	674	763	868	981	1091	1183	1236
74	1133	1148	1120	1036	952	824	707	619	556	551	577	660	760	874	989	1079	1133
75	1020	1051	1021	941	859	730	622	528	471	460	495	565	663	778	885	975	1020
76	911	950	927	850	758	641	533	452	391	381	412	476	570	684	794	870	911
77	789	848	829	754	665	556	451	372	319	309	334	392	478	583	695	772	789
78	673	728	731	661	577	471	375	302	257	245	265	316	397	498	602	660	673
79	551	611	633	575	493	393	304	243	201	189	204	250	320	416	505	542	551
80	435	487	546	491	411	321	240	189	150	141	151	183	249	338	422	433	435
81	333	384	447	411	333	240	173	137	103	99	100	121	177	267	336	331	333
82	246	290	352	335	250	164	112	85	64	61	59	72	112	201	248	244	246
83	170	201	257	257	174	102	65	45	37	37	34	41	65	137	176	165	170
84	107	133	182	181	112	57	33	26	24	21	23	26	35	84	114	106	107
85	56	75	117	116	63	28	19	14	11	10	12	18	23	45	69	58	56
86	21	31	64	66	30	16	8	7	7	6	5	8	15	23	34	23	21
87	7	10	25	28	15	7	4	5	5	4	3	3	5	13	13	8	7
88	3	3	6	7	5	3	2	4	1	3	2	3	1	2	4	2	3
89	2	2	2	2	2	1	1	1	1	1	1	2	1	1	1	1	2
90	0	1	1	0	1	1	1	1	1	1	1	2	0	0	0	0	0
91	0	0	0	0	1	1	1	1	1	2	1	2	0	0	0	0	0
92	0	0	0	0	1	1	1	2	1	2	1	1	0	0	0	0	0

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

Report Format Number STD/QR4909-A/2

Address: 8th floor, Block B, No. 11 Caipin Road, Guangzhou Science City, Tianhe, Guangzhou 510663, China

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93	0	0	0	0	1	1	1	2	2	2	1	1	0	0	0	0	0	
94	0	0	0	0	1	1	1	2	2	2	2	1	0	0	0	0	0	
95	0	0	0	0	1	1	1	2	2	2	2	1	0	0	0	0	0	
96	0	0	0	0	1	1	1	2	2	2	2	2	1	1	0	0	0	
97	0	0	0	0	1	1	2	2	2	2	2	2	1	1	0	0	0	
98	0	0	0	0	1	2	2	2	2	3	2	2	1	1	1	0	0	
99	0	0	0	1	2	2	2	2	7	3	2	2	1	1	1	0	0	
100	0	0	0	1	2	2	2	3	18	3	2	2	1	1	1	0	0	
101	1	1	1	1	2	2	3	3	21	3	2	2	1	1	1	1	1	
102	1	1	1	1	2	2	3	3	27	3	3	2	2	1	1	1	1	
103	1	1	1	1	2	2	3	3	15	3	3	3	2	2	1	1	1	
104	1	1	1	1	2	3	3	3	3	3	3	3	2	2	1	1	1	
105	1	1	1	2	3	3	3	3	3	3	3	3	2	2	2	1	1	
106	1	1	2	2	3	3	3	3	3	3	3	3	3	2	2	2	1	
107	2	2	2	2	3	3	3	3	3	3	4	3	3	2	2	2	2	
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123	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	4	5	5
124	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	4	5	5

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Report Format Number STD/QR4909-A/2

Address: 8th floor, Block B, No. 11 Caipin Road, Guangzhou Science City, Tianhe, Guangzhou 510663, China

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125	6	5	4	5	5	5	5	5	6	5	5	5	5	5	4	5	6
126	6	5	5	6	5	6	5	5	6	6	6	5	6	5	4	6	6
127	6	6	5	6	6	6	5	5	6	6	6	6	6	6	4	6	6
128	6	6	5	6	6	6	6	6	6	6	6	6	6	6	4	6	6
129	6	6	5	6	6	6	6	6	6	6	6	6	6	6	5	6	6
130	6	6	5	6	6	6	6	6	6	6	7	6	6	6	5	6	6
131	6	7	5	6	7	6	6	6	6	6	7	6	6	6	5	6	6
132	6	7	6	6	7	6	7	7	6	7	7	6	6	6	5	7	6
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139	7	7	6	7	8	8	7	9	7	8	7	8	7	6	5	7	7
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148	8	9	8	8	10	9	8	10	8	9	9	9	8	7	7	9	8
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155	9	9	9	8	10	10	10	10	9	9	10	10	8	8	9	9	9
156	9	9	9	8	10	10	10	10	9	9	10	10	8	8	9	9	9

Laboratory: Standard-Tech Co. Ltd Testing Center
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Address: 8th floor, Block B, No. 11 Caipin Road, Guangzhou Science City, Tianhe, Guangzhou 510663, China

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157	9	9	10	8	10	10	10	10	9	9	10	10	8	8	9	10	9
158	9	10	9	8	10	10	10	10	9	9	10	10	8	8	9	10	9
159	9	10	9	8	10	10	10	11	9	9	10	10	8	8	9	10	9
160	10	10	10	9	10	10	10	11	10	9	10	10	9	8	9	10	10
161	10	10	10	9	10	10	10	11	10	9	10	10	9	8	9	10	10
162	10	10	10	9	11	10	11	11	10	9	10	11	9	8	9	10	10
163	10	10	10	9	11	10	11	11	10	9	10	11	9	8	9	10	10
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166	10	10	10	9	11	11	11	11	10	9	10	11	9	9	10	10	10
167	10	11	10	9	11	11	11	11	10	9	10	11	10	9	10	10	10
168	10	11	10	9	11	11	11	12	11	10	11	12	10	9	10	10	10
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170	10	11	11	9	12	12	11	12	11	11	11	12	10	9	10	11	10
171	11	11	11	10	12	12	11	12	12	11	12	12	10	10	11	11	11
172	11	11	11	10	12	12	11	12	12	11	12	12	11	10	11	11	11
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174	11	11	11	10	12	12	11	12	12	11	12	12	11	10	11	11	11
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179	11	11	12	11	12	12	11	11	11	11	11	12	11	11	11	11	11
180	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11

3. Test Equipment

Equipment ID	Equipment Name	Last Calibration Date	Next Calibration Date
ST-R-336	2 meter Integrating Sphere	2015-07-01	2016-06-30
ST-R-331	Spectral analysis system HAAS-2000	2015-07-01	2016-06-30
D204	Standard Lamp	2015-07-01	2016-06-30
PF2010	Power Meter for Integrating Sphere	2015-07-01	2016-06-30
EE-09	Goniophotometer system	2015-07-01	2016-06-30
D908S	Standard Lamp	2015-07-01	2016-06-30
PF210	Power Meter for Goniophotometer	2015-07-01	2016-06-30
ST-R-181A	Temperature Tester	2015-07-01	2016-06-30
Uncertainty: Photometric Measurement (Sphere):1.74% Chromaticity Measurement(Sphere):14.3K Photometric Measurement(Goniophotometer):1.62%			

******* END OF DATASHEET PACKAGE *******