



Report No.: GZE150818-K2

NVLAP LAB CODE 201011-0

## 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): 83478

Representative (Tested) Model: 83478

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

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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-K2
Laboratory Contact Name	Tommy Liang

**Product Information:**

Organization Name	Premium Quality Lighting	
Brand Name	Superior Life®	
Model Number	83478	
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	--	156.8	W
Input Current	--	1.3135	A
Input Voltage (ac)	--	120.0	V
Power Factor	--	0.9948	
Off-State Power	--	0	W

**Photometric Characteristics**

Total Initial Lumen Output	--	20672	lm
Initial Lumen Efficacy	--	131.84	lm/w
Correlated color temperature / CCT	4945	--	K
Color rendering index / CRI	75.2	--	
R9 Value	0	--	
Duv	0.0040	--	
<b>Luminous Intensity Distribution</b>			
Center beam candlepower (if applicable)		7339	cd
Beam angle (if applicable)		114.1	°
Zonal lumens in the 0°-60° zone		81.9	%
Zonal lumens in the 60°-90° zone	----	17.9	%
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  $1\text{ }^{\circ}$  vertical intervals and  $22.5\text{ }^{\circ}$  horizontal intervals.

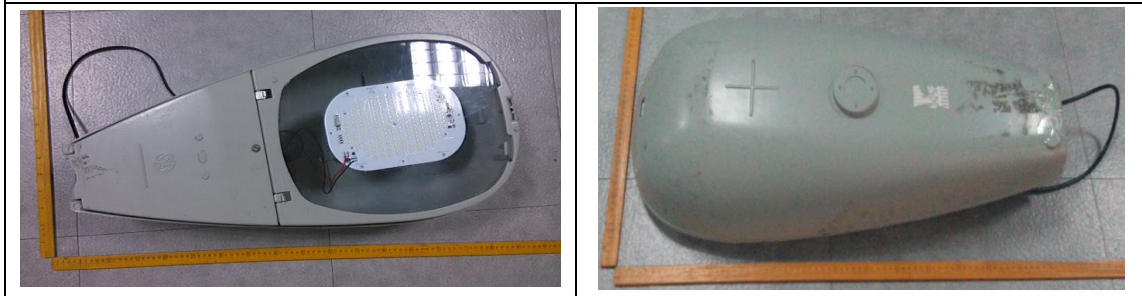
#### 2. Photometric and Electrical Measurements – Integrating Sphere Method:

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.

**1. Product Information:**

Brand Name	Superior Life®
Model Number	83478
Luminaire Type	Retrofit Kits for Outdoor Pole/Arm-mounted Area and Roadway Luminaires
Rated Voltage / Frequency	100~ 277V, 50/60 Hz
Nominal Power	150W
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-K21(5000K)

**Photo**



<b>2.1 Electrical, Photometric and Chromaticity Measurements</b> (Refer to Work Instruction QD25)	<b>IES LM-79 2008</b>
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<b>Test date</b>	2015-08-15	<b>Test Ambient:</b>	25.2 °C
<b>Test Orientation</b>	As intended	<b>Stabilization Time (min)</b>	90
<b>Model Number</b>	83478		

**Electrical Measurement:**

Sample No.	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD %
GZE150818	120.0	60	1.3135	156.8	0.9948	7.84
-K21	277.0	60	0.6146	159.6	0.9375	10.56

**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)	4945	R5	72	R13	74
Chromaticity (x, y)	x=0.3475 y=0.3617	R6	72	R14	92
Chromaticity (u', v')	u'=0.2092 v'=-0.4899	R7	85	R15	67
Duv	0.0040	R8	60	--	--

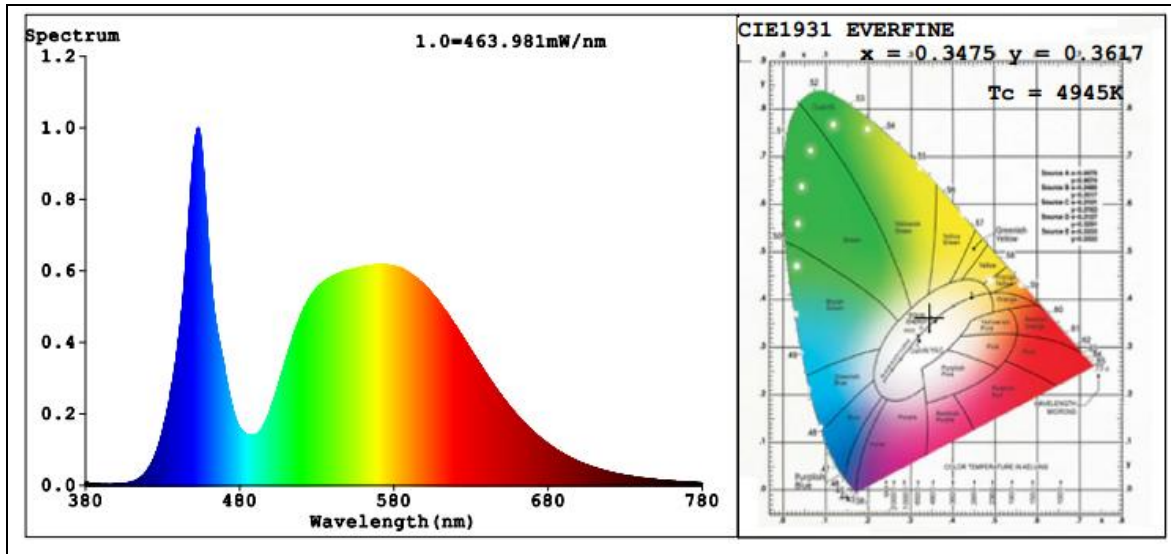
**Goniophotometer Method in GE M250R2 Roadway Lamp:**

Parameter	Result
Test Voltage (V)	120.0
Frequency (Hz)	60
Total Luminous (lm)	20672
Luminous Efficacy (lm/W)	131.84
Beam Angle °	114.1
Center Beam Candle Power (cd)	7339

**Goniophotometer Method in GE M250R2 Roadway Lamp:**

Parameter	Result
Test Voltage (V)	277.0
Frequency (Hz)	60
Total Luminous (lm)	20664
Luminous Efficacy (lm/W)	129.47

**Spectral Power Distribution & Chromaticity Diagram**



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**Zonal Lumen Tabulation**

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
0-30	5,759.3	27.9%
0-40	9,499.8	46%
0-60	16,921.5	81.9%
60-90	3,701.6	17.9%
70-100	1,201.2	5.8%
90-120	12.5	0.1%
0-90	20,623.1	99.8%
90-180	46.6	0.2%
0-180	20,669.7	100%

Lumens Per Zone					
Zone	Lumens	% Total	Zone	Lumens	% Total
0-10	695.6	3.4%	90-100	2.1	0%
10-20	2,000.1	9.7%	100-110	4.5	0%
20-30	3,063.5	14.8%	110-120	5.9	0%
30-40	3,740.6	18.1%	120-130	7.2	0%
40-50	3,916.6	18.9%	130-140	7.8	0%
50-60	3,505.1	17.0%	140-150	7.3	0%
60-70	2,502.6	12.1%	150-160	6.2	0%
70-80	1,100.7	5.3%	160-170	4.1	0%
80-90	98.4	0.5%	170-180	1.5	0%

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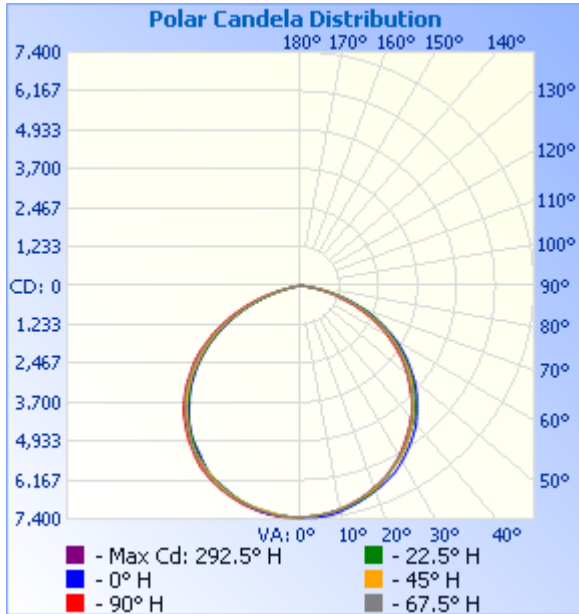
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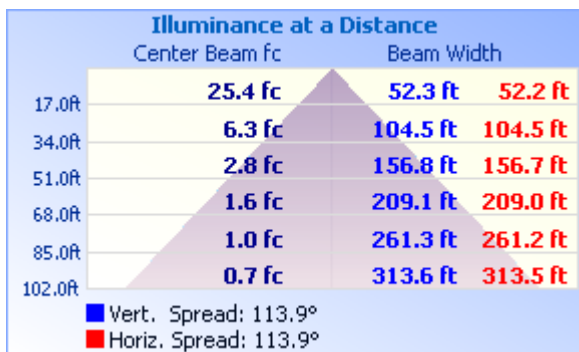
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### Photometric Data

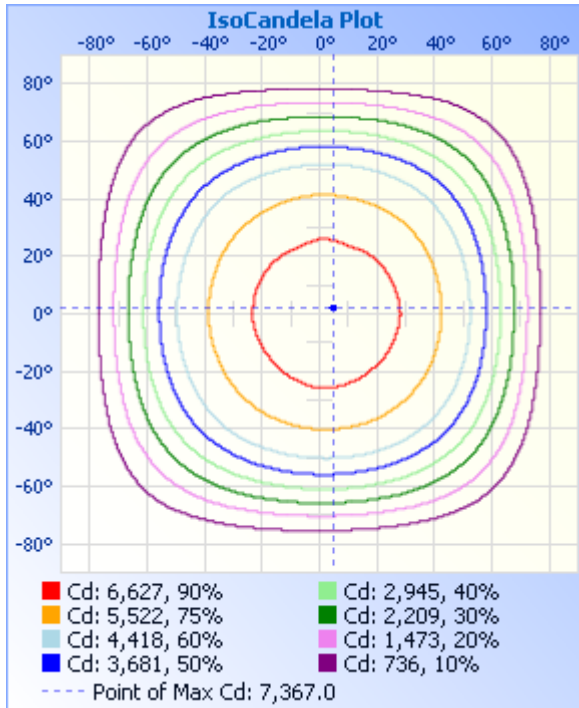


### Illuminance Plots

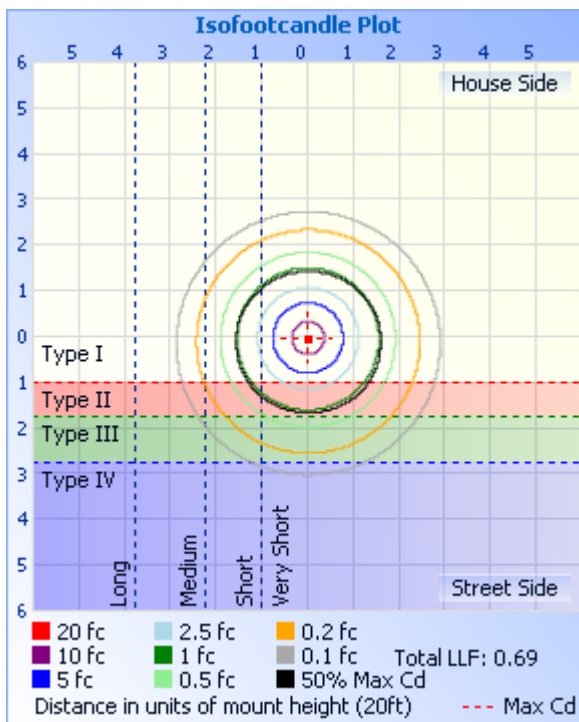




### ISOCANDELA DIAGRAM



### 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	7339	7339	7339	7339	7339	7339	7339	7339	7339	7339	7339	7339	7339	7339	7339	7339	7339
1	7346	7334	7336	7333	7335	7333	7333	7336	7337	7344	7345	7344	7345	7344	7343	7341	7346
2	7350	7326	7327	7326	7328	7325	7328	7335	7335	7344	7346	7349	7352	7352	7347	7340	7350
3	7354	7323	7315	7317	7319	7320	7322	7329	7332	7329	7338	7347	7357	7358	7351	7339	7354
4	7355	7311	7297	7307	7310	7312	7312	7320	7327	7317	7323	7340	7358	7364	7357	7335	7355
5	7353	7300	7285	7292	7295	7294	7298	7308	7326	7307	7306	7330	7355	7367	7357	7330	7353
6	7347	7282	7273	7277	7283	7274	7278	7293	7321	7292	7285	7318	7345	7363	7351	7322	7347
7	7335	7263	7267	7260	7270	7249	7258	7278	7315	7275	7261	7303	7331	7348	7336	7304	7335
8	7317	7246	7249	7239	7247	7222	7234	7258	7305	7249	7245	7284	7319	7324	7313	7281	7317
9	7298	7230	7228	7219	7220	7193	7210	7237	7281	7229	7228	7263	7299	7302	7286	7260	7298
10	7272	7216	7197	7197	7186	7169	7185	7211	7266	7213	7209	7245	7283	7280	7265	7233	7272
11	7238	7198	7168	7171	7156	7144	7153	7184	7241	7196	7188	7228	7262	7255	7241	7211	7238
12	7204	7169	7134	7139	7129	7110	7116	7161	7215	7172	7178	7203	7239	7233	7218	7186	7204
13	7173	7139	7104	7106	7095	7070	7083	7136	7183	7142	7157	7172	7210	7209	7196	7165	7173
14	7140	7108	7074	7068	7061	7022	7049	7106	7149	7117	7127	7144	7187	7187	7166	7149	7140
15	7105	7076	7045	7034	7031	6969	7007	7065	7112	7089	7097	7118	7160	7160	7138	7129	7105
16	7072	7045	7012	6995	6992	6920	6964	7018	7070	7053	7060	7090	7128	7136	7113	7110	7072
17	7032	7015	6973	6951	6953	6879	6916	6966	7021	7014	7030	7061	7094	7105	7083	7084	7032
18	6994	6980	6934	6901	6910	6841	6866	6903	6972	6979	6998	7033	7060	7068	7052	7050	6994
19	6962	6945	6903	6852	6861	6805	6815	6843	6924	6940	6964	7006	7027	7029	7015	7013	6962
20	6921	6903	6867	6807	6810	6760	6763	6796	6875	6898	6917	6974	6990	6992	6979	6957	6921
21	6881	6849	6817	6767	6762	6716	6715	6753	6828	6851	6867	6934	6949	6948	6939	6903	6881
22	6843	6784	6764	6726	6717	6673	6665	6713	6788	6809	6820	6895	6908	6905	6893	6848	6843
23	6804	6724	6708	6679	6667	6638	6622	6674	6748	6765	6770	6850	6866	6854	6842	6789	6804
24	6755	6658	6650	6620	6619	6591	6577	6630	6703	6720	6712	6795	6823	6799	6788	6735	6755
25	6714	6596	6588	6563	6562	6546	6529	6582	6657	6663	6661	6736	6773	6748	6736	6680	6714
26	6667	6535	6529	6503	6502	6492	6480	6519	6604	6604	6607	6680	6722	6701	6679	6623	6667
27	6617	6473	6476	6441	6437	6441	6424	6450	6540	6546	6555	6616	6669	6650	6622	6568	6617
28	6557	6417	6418	6382	6375	6388	6358	6379	6460	6479	6497	6547	6618	6598	6566	6518	6557
29	6490	6363	6363	6312	6307	6318	6293	6312	6378	6411	6433	6489	6561	6537	6512	6466	6490

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30	6427	6305	6297	6250	6238	6235	6225	6242	6297	6348	6380	6431	6490	6479	6462	6413	6427
31	6365	6240	6235	6179	6163	6156	6162	6168	6218	6277	6334	6364	6417	6416	6402	6349	6365
32	6293	6172	6172	6109	6079	6067	6096	6093	6148	6199	6270	6294	6345	6355	6341	6285	6293
33	6222	6098	6095	6042	6001	5982	6026	6013	6080	6120	6204	6226	6268	6288	6271	6208	6222
34	6150	6020	6018	5964	5925	5881	5949	5940	6022	6042	6129	6150	6191	6217	6208	6136	6150
35	6078	5942	5943	5885	5846	5784	5864	5864	5953	5958	6041	6065	6117	6150	6141	6067	6078
36	6008	5863	5862	5799	5770	5694	5771	5795	5873	5880	5946	5975	6041	6073	6065	6003	6008
37	5935	5790	5777	5716	5693	5617	5674	5714	5783	5802	5853	5890	5959	5988	5985	5936	5935
38	5861	5723	5690	5632	5611	5548	5572	5620	5693	5721	5759	5798	5873	5899	5897	5864	5861
39	5786	5651	5603	5548	5526	5475	5475	5521	5599	5628	5666	5714	5785	5810	5808	5776	5786
40	5699	5583	5522	5469	5446	5390	5383	5415	5507	5536	5573	5630	5700	5724	5717	5681	5699
41	5598	5512	5427	5387	5365	5307	5292	5314	5397	5442	5486	5555	5615	5642	5625	5589	5598
42	5505	5435	5319	5300	5274	5209	5198	5211	5286	5346	5392	5471	5531	5555	5535	5500	5505
43	5408	5345	5215	5207	5174	5118	5110	5103	5173	5239	5308	5378	5447	5458	5446	5418	5408
44	5308	5241	5106	5111	5072	5018	5022	4992	5065	5128	5215	5285	5344	5359	5359	5331	5308
45	5212	5135	5004	5007	4960	4923	4911	4878	4975	5003	5114	5188	5237	5258	5259	5227	5212
46	5124	5034	4918	4903	4845	4820	4799	4785	4874	4890	4994	5088	5126	5162	5161	5125	5124
47	5027	4938	4838	4791	4732	4713	4688	4702	4760	4791	4870	4977	5017	5061	5057	5029	5027
48	4925	4844	4750	4672	4632	4597	4581	4599	4645	4693	4743	4853	4907	4958	4952	4931	4925
49	4820	4737	4665	4557	4529	4483	4475	4477	4517	4586	4627	4726	4792	4852	4846	4828	4820
50	4713	4632	4567	4453	4423	4357	4360	4349	4398	4467	4511	4610	4667	4731	4747	4725	4713
51	4594	4512	4461	4343	4315	4231	4234	4224	4276	4332	4391	4495	4544	4598	4634	4624	4594
52	4475	4392	4350	4241	4198	4119	4105	4107	4143	4192	4250	4373	4417	4465	4513	4509	4475
53	4362	4285	4232	4132	4089	4018	3970	3986	4015	4055	4111	4237	4306	4348	4395	4393	4362
54	4244	4167	4107	4020	3961	3899	3840	3835	3885	3907	3980	4094	4189	4241	4283	4278	4244
55	4135	4051	3981	3902	3832	3759	3702	3707	3746	3777	3857	3962	4069	4132	4160	4159	4135
56	4022	3921	3855	3785	3703	3620	3565	3579	3607	3641	3714	3837	3928	3995	4033	4026	4022
57	3896	3794	3735	3664	3575	3481	3428	3451	3468	3506	3570	3694	3787	3850	3899	3885	3896
58	3773	3685	3606	3534	3446	3350	3290	3297	3324	3370	3426	3551	3639	3711	3776	3762	3773
59	3641	3564	3481	3392	3325	3222	3152	3134	3172	3208	3280	3407	3482	3594	3650	3641	3641
60	3509	3435	3357	3246	3202	3098	3030	2990	3030	3066	3140	3255	3336	3465	3509	3519	3509
61	3373	3297	3245	3110	3061	2961	2897	2836	2876	2925	2990	3100	3208	3323	3355	3367	3373

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62	3238	3158	3115	2982	2916	2836	2751	2699	2722	2760	2840	2959	3062	3167	3211	3237	3238
63	3107	3023	2967	2856	2761	2683	2607	2550	2576	2603	2685	2807	2905	3011	3080	3103	3107
64	2968	2890	2825	2723	2636	2529	2459	2412	2416	2435	2532	2638	2740	2859	2928	2966	2968
65	2821	2754	2690	2580	2507	2386	2300	2270	2259	2287	2369	2469	2590	2711	2780	2823	2821
66	2678	2622	2548	2436	2354	2245	2155	2114	2102	2141	2207	2315	2440	2559	2641	2681	2678
67	2538	2496	2384	2306	2194	2088	2012	1957	1956	1981	2030	2149	2279	2394	2486	2516	2538
68	2380	2345	2255	2170	2051	1939	1847	1799	1776	1811	1879	1989	2105	2241	2335	2377	2380
69	2240	2198	2118	2013	1920	1788	1699	1647	1629	1655	1724	1833	1962	2083	2183	2237	2240
70	2086	2043	1975	1875	1771	1648	1551	1480	1469	1484	1556	1671	1797	1926	2015	2087	2086
71	1921	1896	1837	1737	1618	1496	1414	1341	1314	1329	1411	1514	1632	1778	1867	1929	1921
72	1781	1751	1699	1598	1490	1356	1266	1200	1162	1179	1249	1353	1486	1630	1720	1776	1781
73	1642	1606	1562	1454	1344	1215	1125	1057	1019	1035	1100	1195	1316	1461	1573	1622	1642
74	1491	1480	1419	1313	1204	1081	987	921	882	890	947	1018	1162	1305	1423	1474	1491
75	1320	1330	1278	1186	1075	955	860	782	737	751	790	849	978	1151	1274	1330	1320
76	1161	1186	1139	1044	939	812	734	648	595	608	638	681	813	1007	1116	1157	1161
77	991	1021	1007	915	797	669	582	517	462	473	494	532	650	838	981	1002	991
78	840	867	878	794	648	523	456	392	349	354	359	393	494	677	840	840	840
79	680	730	752	656	509	390	333	287	249	252	250	271	357	527	701	689	680
80	529	583	621	518	376	278	228	197	172	165	164	177	241	388	549	546	529
81	403	443	495	389	267	186	147	127	110	106	99	105	149	270	407	413	403
82	294	328	372	275	176	112	89	77	68	66	60	62	85	172	284	292	294
83	194	227	257	183	106	65	55	51	48	47	44	46	51	102	187	202	194
84	118	145	168	110	61	49	42	39	38	37	33	37	41	57	111	125	118
85	61	80	101	61	47	37	30	27	27	22	20	25	32	40	64	66	61
86	33	39	56	44	36	25	18	15	14	11	9	12	19	31	36	33	33
87	19	22	31	31	23	15	10	10	9	7	5	6	7	19	21	18	19
88	9	11	16	17	13	8	5	6	3	5	3	4	3	5	10	9	9
89	5	5	6	6	6	6	2	3	2	2	2	2	1	2	3	4	5
90	2	2	2	1	2	5	2	3	2	2	2	2	1	1	1	1	2
91	1	1	1	1	2	4	2	3	2	2	2	2	1	1	1	1	1
92	1	1	1	1	2	3	2	3	2	3	2	2	1	1	1	1	1
93	1	1	1	1	2	2	2	4	2	3	2	2	1	1	1	1	1

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 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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94	1	1	1	1	2	2	2	4	2	3	2	2	1	1	1	1	1
95	1	1	1	1	2	2	2	4	3	3	2	2	1	1	1	1	1
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98	1	2	1	1	2	3	3	4	4	4	3	3	1	1	1	1	1
99	1	2	1	2	3	3	3	4	7	4	3	3	2	2	1	1	1
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101	2	2	2	2	3	3	4	4	29	4	3	3	2	2	2	2	2
102	2	2	2	2	3	4	4	4	28	4	4	3	2	2	2	2	2
103	2	2	2	3	4	4	4	4	25	4	4	4	3	3	2	2	2
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105	3	3	3	3	4	4	5	4	5	4	4	4	3	3	3	3	3
106	3	3	3	4	5	5	5	5	5	5	5	5	4	4	3	3	3
107	3	3	4	4	5	5	5	5	5	5	5	5	4	4	3	3	3
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120	7	6	7	8	8	7	8	7	7	6	7	7	7	6	6	6	7
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124	9	8	7	8	8	8	8	8	8	8	7	7	8	7	6	8	9
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Laboratory: Standard-Tech Co. Ltd Testing Center  
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Report Format Number STD/QR4909-A/2

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126	9	9	8	9	8	9	8	8	8	8	8	8	8	8	6	8	9
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130	10	10	9	10	10	9	9	9	9	9	9	8	9	8	7	9	10
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Laboratory: Standard-Tech Co. Ltd Testing Center  
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158	14	14	13	13	15	16	15	15	13	13	15	15	12	11	13	14	14
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180	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16

**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 \*\*\*\*\***