



Testing Lab.

Shenzhen LCS Compliance Testing Laboratory Ltd.



TESTING  
NVLAP LAB CODE 600112-0

Report No.:LCS171221045BS

### TEST REPORT of IES LM-79-08

Approved Method for Electrical and Photometric Measurements of Solid-State Lighting Products

Client..... : Shenzhen Sinoco Lighting Technologies Co.,Ltd.

Address..... : G building, Shasi, High-Tec, Industrial park, Shajing Town, Bao' an District,  
Shenzhen, Guangdong, China

Brand Name..... : Sinoco

Testing laboratory..... : Shenzhen LCS Compliance Testing Laboratory Ltd.

Address..... : B Area, 2F, Building B, Zhongyu Green Wenge Road, Heshuikou, Gongming  
Street, Guangming New District, Shenzhen, Guangdong Prov .518000 China

Product description .. : LED street light

Models..... : ST-52-150W-4000K

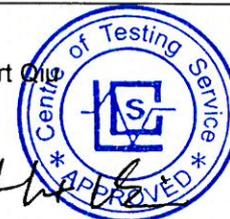
Rating..... : 100-240Vac, 50/60Hz, 150W, 4000K

Test by: William Lian

Reviewed by: Hart Ouyang

Signature: *William*

Signature: *Hart Ouyang*



Test date: January 04, 2018

Reviewed date: January 12, 2018

The duplication of this report or parts of it and its use for advertising purposes is only allowed with permission of the testing laboratory. This report contains the result of examination of the product sample submitted by the appliance. A general statement concerning the quality of the products from the series manufacture cannot be derived therefore. This report can be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the Federal Government.

## Table of Contents

<b>1. Test Method.....</b>	<b>3</b>
<b>2.Product Information.....</b>	<b>4</b>
<b>3.Test equipment list:.....</b>	<b>4</b>
<b>4. Integrating Sphere Test Results: .....</b>	<b>5</b>
<b>4.1 Test Data.....</b>	<b>5</b>
<b>4.2 Spectrum.....</b>	<b>5</b>
<b>5. Goniophotometer Test results.....</b>	<b>6</b>
<b>5.1 Test Data.....</b>	<b>6</b>
<b>5.2 Luminous Intensity Distribution Diagram and C0 Plane Isolux     Diagram (Unit : lx).....</b>	<b>6</b>
<b>5.3 Zonal Flux Diagram.....</b>	<b>7</b>
<b>5.4 Isocandela Diagram.....</b>	<b>8</b>
<b>5.5 Luminous Distribution Intensity Data.....</b>	<b>9</b>
<b>6. Photo of sample:.....</b>	<b>10</b>

## 1. Test Method

Test Item.....	: Integrating Sphere Test
Ambient Condition .....	: 25.1°C
Number of hours operated prior to Measurement .....	: 0h
Stabilization time .....	: 0.5h
Orientation(burning position) of SSL product during test .....	: down
Test Method .....	: The sample was tested according to the IES LM-79-2008.  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 rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.
Test Item.....	: Goniophotometer Test
Ambient Condition.....	: 25.1°C
Total operated time of the product for measurements including stabilization..... (h):	: 2.5h
Correction factors applied.....	: Intensity distribution
Orientation(burning position) of SSL product during test .....	: down
Test Method.....	: The sample was tested according to the IES LM-79-2008.  Photometric paramters were measured using a type C goniophotometer and software. The sample reference plane was located at the center of the sample goniometer at a test distance of 26m from the detectors. The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, Luminous efficacy, zonal flux were calculated from the software taken at 1° vertical intervals and 22.5° horizontal intervals.

## 2.Product Information

Product description.....:	LED street light
Model Number.....:	ST-52-150W-4000K
Rated Inputs.....:	100-240VAC, 50/60Hz
Rated Power.....:	150W
Declared CCT.....:	4000K
LED Manufacturer.....:	N/A
LED Model.....:	N/A
LED Package, Array or Module.....:	N/A
Forward current of the LED chip.....:	N/A
Date of Receipt Samples.....:	January 03, 2018
Quantity of Receipt Samples.....:	1 unit

## 3.Test equipment list:

Manufacturer	Description	Equipment ID	Model	Calibration Date	Calibration Due Date
EVERFINE	Full-field Speed Goniophotometer	SLCS-S-112	GO-R5000	2017/08/15	2018/08/14
EVERFINE	Digital Power Meter	SLCS-S-103	PF2010	2017/08/15	2018/08/14
EVERFINE	AC Testing Power Source	SLCS-S-115	DPS1060	2017/08/15	2018/08/14
EVERFINE	Total Spectral Radiant Flux Standard Lamp	SLCS-S-143	D908S	2017/08/14	2018/08/13
SENSING	2 Meter Integrating Sphere	SLCS-S-038	SPR-3000	2017/08/15	2018/08/14
YOKOGAWA	Digital Power Meter	SLCS-S-058	WT310	2017/08/15	2018/08/14
ALL POWER ELECTRONIC	AC Testing Power Source	SLCS-S-111	APW-105N	2017/08/15	2018/08/14
SENSING	Standard Lamp	SLCS-S-118	S11010017	2017/08/14	2018/08/13

## 4. Integrating Sphere Test Results:

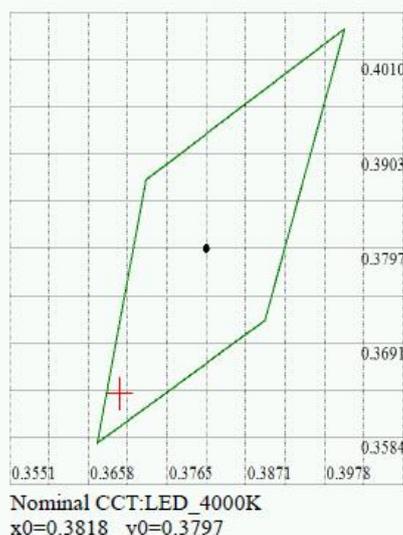
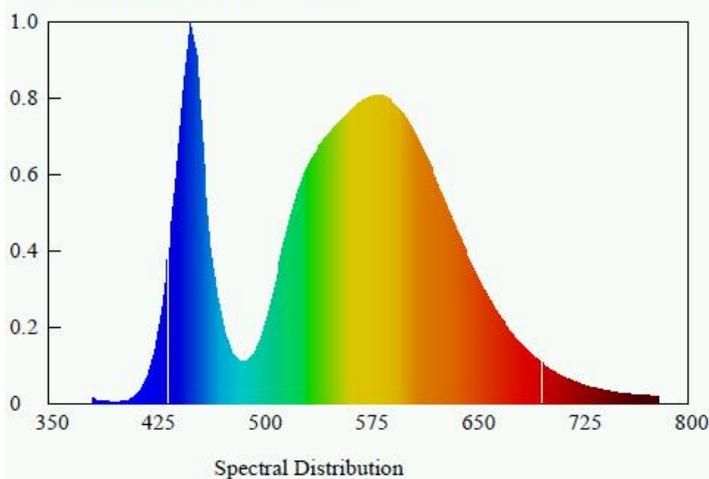
### 4.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.0	50.0	0.697	0.985	151.0

Test type	CCT (K)	CRI	Luminous flux (lm)	Luminous efficacy(lm/w)
Output	4204	72.9	18887.14	125.1

### 4.2 Spectrum

#### Spectroradiometric Parameters



Chromaticity Coordinates: x=0.3700 y=0.3634 u'=0.2235 v'=0.4940

Correlated Color Temperature: 4204 K

Dominant Wavelength: 579.0 nm(E)

Colour Fidelity Index: Rf=69

Gamut Index: Rg=94

Luminous Flux: 18887.14 lm

Purity: 0.2013

Chromaticity Difference: -0.003Duv

Peak Wavelength: 450.0 nm

Color Ratio: Kr=36.7% Kg=56.7% Kb=6.7%

Bandwidth: 24.5nm

Radiant Flux: 46.875 W

Photosynthetically Active Radiation(PAR): 45.72W

Photosynthetic Photon Flux(PPF):213.62μmol/s

Rendering Index: Ra=72.9

R1=71 R2=79 R3=83 R4=72 R5=70 R6=69 R7=82 R8=57

R9=-17 R10=48 R11=65 R12=40 R13=73 R14=90 R15=68 Re=63



Testing Lab.

Shenzhen LCS Compliance Testing Laboratory Ltd.



TESTING  
NVLAP LAB CODE 600112-0

Report No.:LCS171221045BS

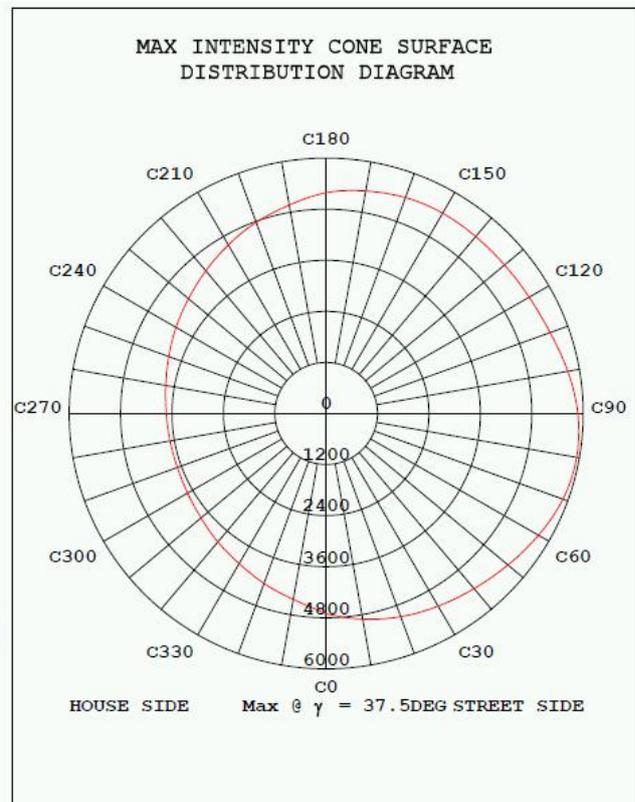
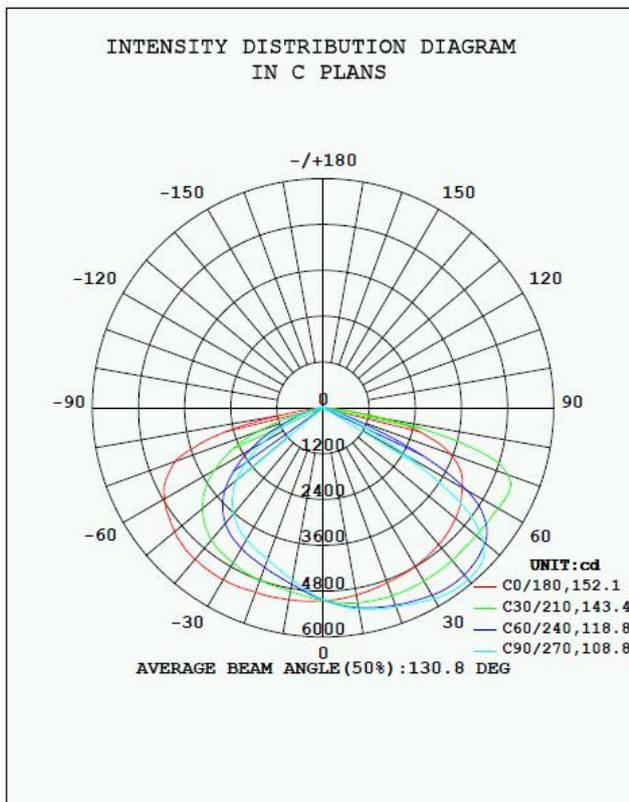
## 5. Goniophotometer Test results

### 5.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.0	50.01	0.7016	0.9855	152.1

Test type	Total Flux (lm)	Luminous efficacy(lm/w)	ZL (0~90° )	ZL (80~90° )
Output	18872.2	124.06	99.80%	0.60%

### 5.2 Luminous Intensity Distribution Diagram and C0 Plane Isolux Diagram (Unit : lx)





Testing Lab.

Shenzhen LCS Compliance Testing Laboratory Ltd.



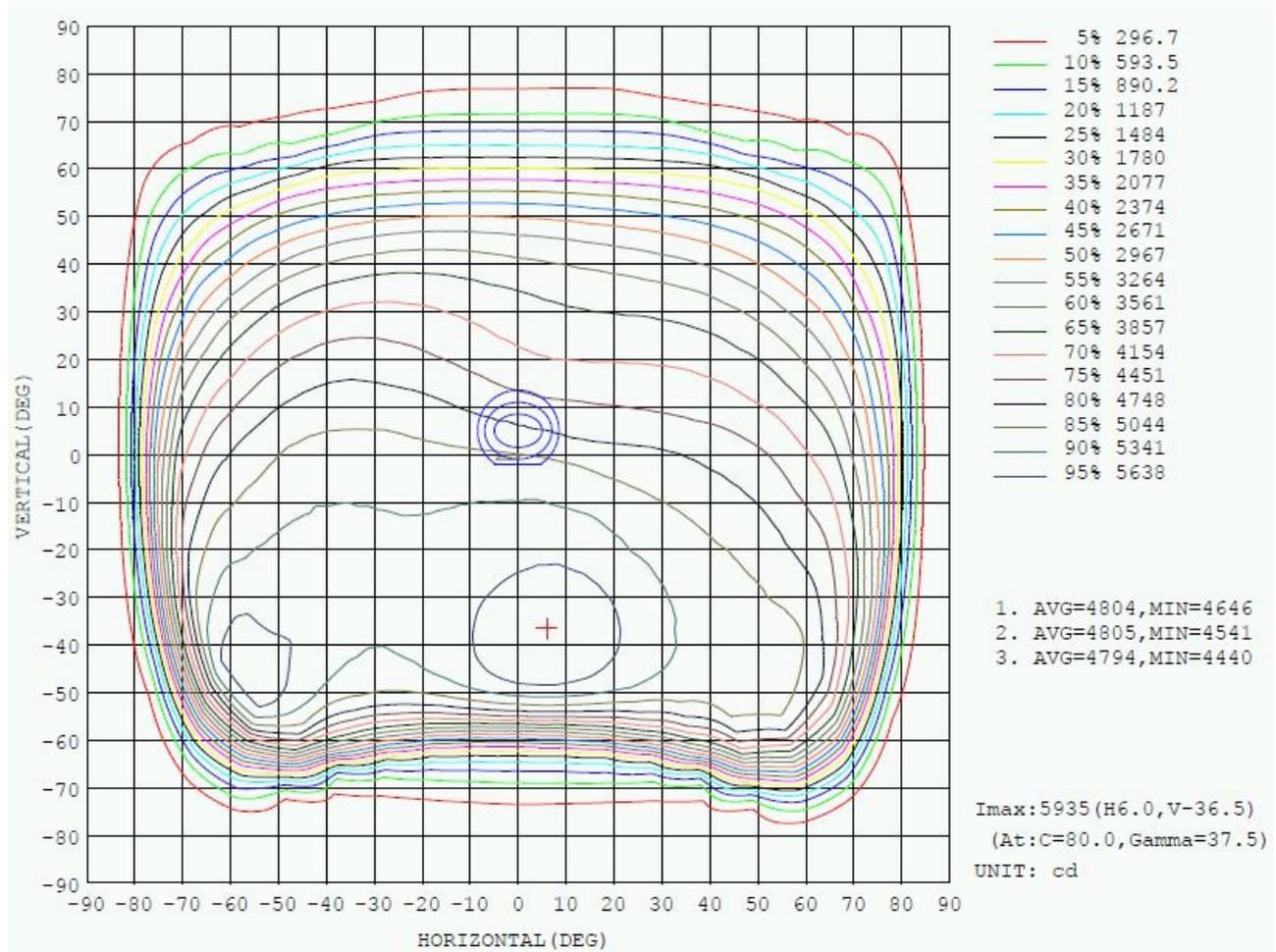
TESTING  
NVLAP LAB CODE 600112-0

Report No.:LCS171221045BS

### 5.3 Zonal Flux Diagram

y	C0	C45	C90	C135	C180	C225	C270	C315	y	Φ zone	Φ total	lum, lamp
10	4977	5240	5345	5274	5100	4786	4583	4653	0- 10	477.6	477.6	2.53,2.53
20	4874	5386	5537	5390	5139	4612	4223	4329	10- 20	1405	1882	9.97,9.97
30	4793	5432	5773	5423	5198	4452	3977	4069	20- 30	2270	4152	22,22
40	4673	5444	5867	5424	5176	4212	3623	3796	30- 40	3037	7189	38.1,38.1
50	4501	5344	5440	5358	5038	3675	2934	3339	40- 50	3590	10779	57.1,57.1
60	4180	5106	2512	5115	4759	2668	1793	2504	50- 60	3655	14434	76.5,76.5
70	3510	3308	505.5	3041	4083	1098	712.1	1181	60- 70	2881	17315	91.7,91.7
80	1589	204.6	64.02	125.5	1161	171.6	184.1	201.7	70- 80	1398	18713	99.2,99.2
90	4.379	2.705	0.3990	1.600	3.977	1.074	0.1587	1.079	80- 90	124.9	18838	99.8,99.8
100	4.053	1.469	0.2381	0.7165	5.413	4.253	0.7104	3.911	90-100	2.420	18841	99.8,99.8
110	5.091	1.548	0.5556	1.271	7.402	6.874	3.349	7.247	100-110	3.639	18844	99.9,99.9
120	5.091	2.413	1.746	2.148	7.078	8.137	6.749	9.513	110-120	4.916	18849	99.9,99.9
130	6.364	4.796	4.286	3.977	6.045	6.824	7.540	8.476	120-130	5.178	18854	99.9,99.9
140	8.179	6.743	6.501	5.647	6.364	6.671	7.461	8.360	130-140	4.990	18859	99.9,99.9
150	9.386	8.812	8.492	7.635	7.085	8.220	8.972	9.394	140-150	4.943	18864	100,100
160	9.784	9.407	9.127	8.436	8.830	9.487	9.365	9.873	150-160	4.159	18868	100,100
170	10.82	10.79	9.917	9.899	9.629	10.48	10.32	10.51	160-170	2.751	18871	100,100
180	12.09	11.43	10.24	10.35	11.45	11.43	10.32	10.35	170-180	1.021	18872	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

### 5.4 Isocandela Diagram





Testing Lab.

Shenzhen LCS Compliance Testing Laboratory Ltd.



TESTING  
NVLAP LAB CODE 600112-0

Report No.:LCS171221045BS

### 5.5 Luminous Distribution Intensity Data

Table--1 UNIT: cd

C (DEG) γ (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	5050	5046	5043	5038	5034	5031	5028	5022	5022	5017	5013	5011	5007	5005	5000	4995	4990	4987	5050
5	5021	5056	5088	5121	5134	5160	5181	5196	5196	5203	5204	5195	5183	5162	5152	5114	5074	5039	5081
10	4977	5047	5120	5182	5228	5252	5314	5342	5353	5345	5347	5332	5317	5291	5256	5185	5148	5088	5100
15	4923	5024	5133	5215	5303	5353	5407	5445	5459	5453	5446	5420	5401	5364	5328	5261	5201	5128	5122
20	4874	4993	5124	5239	5348	5424	5498	5548	5559	5537	5522	5474	5450	5408	5372	5314	5242	5159	5139
25	4833	4973	5112	5241	5362	5466	5577	5654	5672	5645	5590	5512	5461	5426	5401	5346	5292	5214	5176
30	4793	4950	5099	5233	5362	5502	5662	5775	5808	5773	5665	5552	5480	5435	5410	5382	5336	5256	5198
35	4733	4925	5090	5232	5378	5535	5721	5862	5918	5855	5717	5573	5479	5435	5420	5415	5376	5291	5193
40	4673	4880	5070	5219	5364	5523	5708	5869	5930	5867	5721	5547	5445	5419	5430	5451	5417	5309	5176
45	4600	4843	5047	5197	5331	5479	5639	5781	5848	5800	5644	5480	5392	5372	5418	5471	5444	5302	5133
50	4501	4797	5038	5193	5296	5391	5502	5542	5525	5440	5346	5269	5270	5308	5407	5517	5477	5286	5038
55	4366	4721	5026	5218	5272	5261	5149	4867	4579	4423	4475	4641	4919	5194	5419	5581	5510	5248	4913
60	4180	4641	5028	5256	5257	4954	4316	3363	2736	2512	2620	3185	4048	4830	5401	5680	5561	5226	4759
65	3956	4563	5051	5314	5103	4117	2558	1495	1187	1112	1161	1414	2349	3889	5227	5862	5708	5192	4522
70	3510	4262	4897	5112	4426	2191	846	606	524	506	497	537	679	1751	4332	5522	5642	4952	4083
75	2759	3583	4229	3970	2307	433	291	245	227	227	220	220	249	326	1645	3293	3895	3547	2979
80	1589	1577	2017	1443	276	134	84.9	70.2	66.8	64.0	62.0	61.6	67.5	93.8	157	820	1011	817	1161
85	226	99.5	118	93.1	25.9	10.6	5.38	3.62	2.79	2.39	2.26	2.58	3.36	5.46	11.6	28.7	39.9	40.8	89.5
90	4.38	4.78	4.87	4.30	3.26	2.15	1.35	0.72	0.41	0.40	0.40	0.40	0.56	1.04	2.16	3.35	4.21	4.85	3.98
95	3.98	3.74	3.50	2.78	2.06	1.35	0.79	0.47	0.32	0.24	0.24	0.24	0.32	0.48	1.19	2.15	2.94	3.81	4.46
100	4.05	3.66	3.26	2.62	1.83	1.11	0.64	0.32	0.32	0.24	0.24	0.24	0.32	0.48	0.96	1.83	2.78	3.58	5.41
105	4.30	3.66	3.26	2.54	1.83	1.11	0.64	0.32	0.32	0.24	0.24	0.24	0.32	0.48	1.04	1.83	2.78	3.50	6.53
110	5.09	3.97	3.26	2.54	1.83	1.27	0.94	0.56	0.55	0.56	0.56	0.48	0.71	1.11	1.43	2.06	2.85	3.66	7.40
115	5.09	3.97	3.26	2.62	2.06	1.59	1.43	1.27	1.19	1.27	1.19	1.19	1.35	1.59	1.99	2.46	3.10	4.05	7.56
120	5.09	4.05	3.42	2.78	2.46	2.37	2.06	1.82	1.67	1.75	1.51	1.67	1.90	2.07	2.23	2.70	3.41	3.97	7.08
125	5.48	5.00	4.45	4.05	3.81	3.48	3.17	3.48	3.09	3.24	3.09	2.93	3.09	2.86	3.19	3.74	4.28	5.00	6.12
130	6.36	5.80	5.48	5.09	5.07	4.52	3.97	4.37	4.21	4.29	4.05	3.96	3.98	3.82	4.14	4.29	5.08	5.64	6.05
135	6.84	6.43	6.20	5.88	5.79	5.24	5.16	5.24	5.23	5.08	5.01	4.92	4.92	4.37	5.10	5.25	5.48	5.96	6.05
140	8.18	8.10	7.63	7.46	6.98	6.51	6.90	6.59	6.43	6.50	6.26	6.03	6.36	5.72	5.57	6.20	6.98	7.46	6.36
145	9.31	8.90	8.91	8.19	8.01	8.01	8.26	8.02	7.70	7.53	7.23	7.30	7.15	7.08	6.53	6.60	7.30	8.18	6.45
150	9.39	9.14	9.30	8.98	8.81	8.81	8.74	8.90	8.74	8.49	8.10	7.86	7.79	7.80	7.48	6.91	7.54	8.18	7.09
155	9.70	9.62	9.86	9.30	9.37	9.37	9.14	9.07	8.90	8.81	8.74	8.26	8.11	8.12	8.28	7.78	7.86	8.27	7.96
160	9.78	9.85	10.2	9.30	9.29	9.52	9.45	9.30	9.29	9.13	9.06	8.73	8.67	8.51	8.36	8.03	8.02	8.66	8.83
165	10.3	10.3	10.3	10.0	10.00	10.2	10.2	10.0	9.21	9.29	9.61	9.21	9.30	8.91	8.92	8.82	9.05	9.38	8.91
170	10.8	11.1	11.6	11.1	10.7	10.9	10.8	10.3	10.1	9.92	10.2	10.1	10.0	9.85	9.95	9.69	10.2	10.2	9.63
175	12.0	11.7	12.0	11.5	11.4	11.3	11.0	10.6	10.3	10.2	10.6	10.6	10.5	10.2	10.4	10.6	10.8	11.2	11.2
180	12.1	11.7	12.0	11.5	11.4	11.5	11.0	10.6	10.3	10.2	10.6	10.5	10.5	10.2	10.5	10.7	11.0	11.3	11.5



Testing Lab.

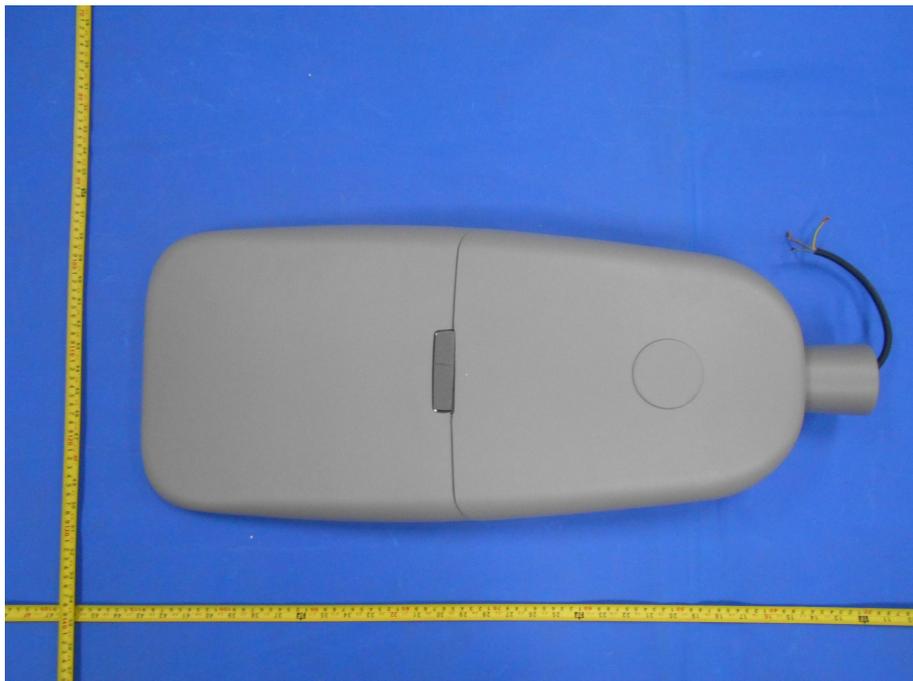
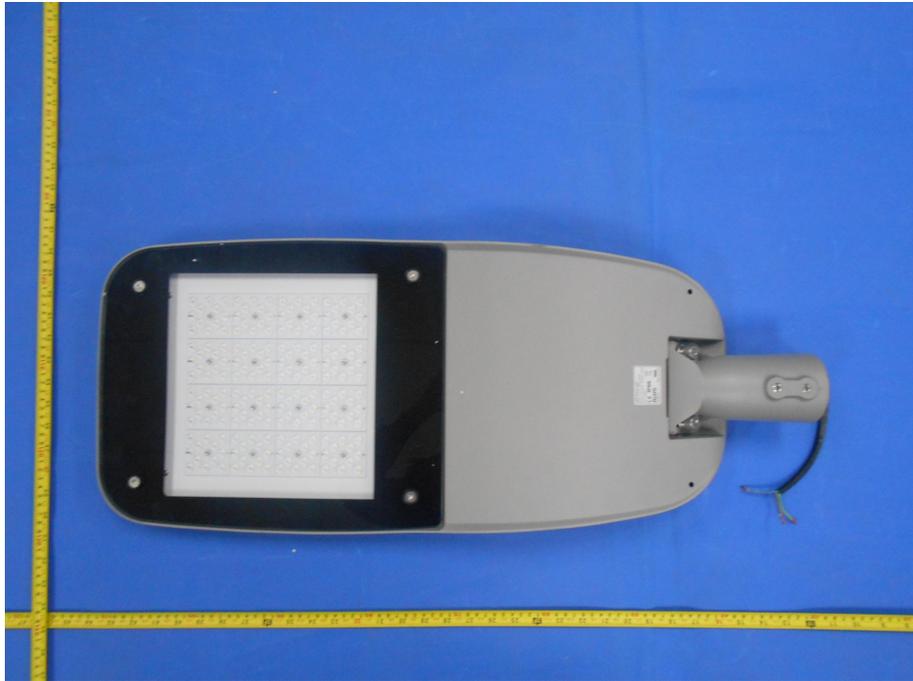
Shenzhen LCS Compliance Testing Laboratory Ltd.



TESTING  
NVLAP LAB CODE 600112-0

Report No.:LCS171221045BS

6. Photo of sample:



----- End of test report-----

TRF No. LM-79-2008

Page 10 of 10

Shenzhen LCS Compliance Testing Laboratory Ltd.

Add: B Area, 2F, Building B, Zhongyu Green Wenge Road, Heshuikou, Gongming Street, Guangming New District, Shenzhen, Guangdong Prov. 518000 China

Tel: +(86) 0755-29871520 | Fax: +(86) 0755-2987 1521 | E-mail: webmaster@lcs-cert.com | [http:// www.lcs-cert.com](http://www.lcs-cert.com)