Testing Lab.

Shenzhen LCS Compliance Testing Laboratory Ltd.

TESTING
NVLAP LAB CODE 600112-0

REPORT NO.:LCS180831035BS

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,Baoan District, Shenzhen, Guangdong,China
Brand Name.....	:	Sinoco
Testing laboratory.....	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address.....	:	B Area, 2F, Building B, Zhongyu Green High-tech Industrial Park, Wenge Road, Heshuikou, Gongming Street, Guangming New District, Shenzhen, China
Product description ...	:	LED street light
Models.....	:	ST-52-120W
Rating.....	:	AC100-240V, 50/60Hz, 120W
Date of Test.....	:	September 03, 2018
Date of Issue.....	:	September 05, 2018

Test by:	**Check by:**	**Approved by:**
James	Ian Luo	
James Zhang/ Project Engineer	Ian Luo/ Director	Jesse Liu/ Manager

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 endorsementby NVLAP,NIST,or any agency of the Federal Government.

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: B Area, 2F, Building B, Zhongyu Green High-tech Industrial Park, Wenge Road, Heshuikou, Gongming Street, Guangming New District, Shenzhen, China
Tel: +(86) 0755-29871520 | Fax: +(86) 0755-2987 1521 | E-mail: webmaster@lcs-cert.com | http:// www.lcs-cert.com

Table of Contents

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add：B Area, 2F, Building B, Zhongyu Green High-tech Industrial Park, Wenge Road, Heshuikou, Gongming Street, Guangming New District, Shenzhen, China
Tel：+(86) 0755-29871520 | Fax：+(86) 0755-2987 1521 | E-mail：webmaster@lcs-cert.com | http:// www.lcs-cert.com

1. Test Method

Test Item.....:	Integrating Sphere Test
Ambient Condition .....:	25.1℃
Stabilization time ……(h):	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℃
Total operated time of the product for measurements including stabilization..... (h):	1h
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.

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add：B Area, 2F, Building B, Zhongyu Green High-tech Industrial Park, Wenge Road, Heshuikou, Gongming Street, Guangming New District, Shenzhen, China
Tel：+(86) 0755-29871520 | Fax：+(86) 0755-2987 1521 | E-mail：webmaster@lcs-cert.com | http:// www.lcs-cert.com

2.Product Information

Product description.....:	LED street light
Model Number.....:	ST-52-120W
Rated Inputs.....:	AC100-240V, 50/60Hz
Rated Power.....:	120W
Declared CCT.....:	4000K
Manufacturer.....:	Shenzhen Sinoco Lighting Technologies Co.,Ltd.
Address.....:	G building,Shasi High-Tec Industrial park,Shajing Town,Baoan District,Shenzhen, Guangdong,China
LED Manufacturer.....:	N/A
LED Model.....:	N/A
Forward current of the LED chip.....:	N/A
Date of Receipt Samples.....:	September 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	2018/08/14	2019/08/13
EVERFINE	Digital Power Meter	SLCS-S-103	PF2010	2018/08/14	2019/08/13
EVERFINE	AC Testing Power Source	SLCS-S-115	DPS1060	2018/08/14	2019/08/13
EVERFINE	Total Spectral Radiant Flux Standard Lamp	SLCS-S-143	D908S	2018/08/22	2019/08/21
SENSING	2 Meter Integrating Sphere	SLCS-S-038	SPR-3000	2018/08/14	2019/08/13
YOKOGAWA	Digital Power Meter	SLCS-S-058	WT310	2018/08/14	2019/08/13
ALL POWER ELECTRONIC	AC Testing Power Source	SLCS-S-111	APW-105N	2018/08/14	2019/08/13
SENSING	Standard Lamp	SLCS-S-118	S11010017	2018/08/22	2019/08/21

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add：B Area, 2F, Building B, Zhongyu Green High-tech Industrial Park, Wenge Road, Heshuikou, Gongming Street, Guangming New District, Shenzhen, China
Tel：+(86) 0755-29871520 | Fax：+(86) 0755-2987 1521 | E-mail：webmaster@lcs-cert.com | http:// www.lcs-cert.com

4. Integrating Sphere Test Results：

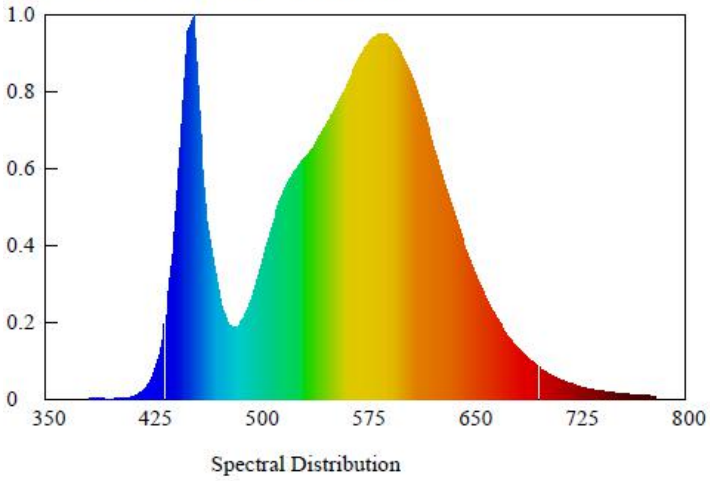
4.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.0	50.00	0.537	0.974	115.06

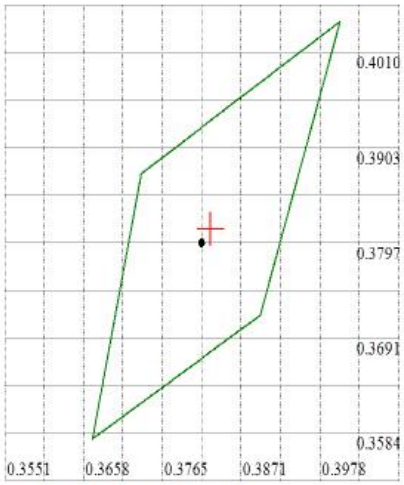
Test type	CCT (K)	CRI	Luminous flux (lm)	Luminous efficacy(lm/W)
Output	3964	74.8	15297.6	132.95

4.2 Spectrum

Spectroradiometric Parameters



Spectral Distribution



Nominal CCT:LED_4000K
x0=0.3818 y0=0.3797

Chromaticity Coordinates: x=0.3830 y=0.3812 u'=0.2250 v'=0.5039

Correlated Color Temperature: 3964 K	Dominant Wavelength: 577.0 nm(E)
Colour Fidelity Index: Rf=74	Gamut Index: Rg=91
Luminous Flux: 15297.6 lm	Purity: 0.2936
Chromaticity Difference: 0.001Duv	Peak Wavelength: 455.0 nm
Color Ratio: Kr=38.3% Kg=53.6% Kb=8.1%	
Bandwidth: 18.7nm	Radiant Flux: 43.666 W
Photosynthetically Active Radiation(PAR): 43.04W	Photosynthetic Photon Flux(PPF):202.05μmol/s

Rendering Index: Ra=74.8

R1=71	R2=84	R3=93	R4=72	R5=71	R6=77	R7=81	R8=50
R9=-30	R10=61	R11=68	R12=48	R13=75	R14=96	R15=64	Re=65

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add：B Area, 2F, Building B, Zhongyu Green High-tech Industrial Park, Wenge Road, Heshuikou, Gongming Street, Guangming New District, Shenzhen, China
Tel：+(86) 0755-29871520 | Fax：+(86) 0755-2987 1521 | E-mail：webmaster@lcs-cert.com | http:// www.lcs-cert.com

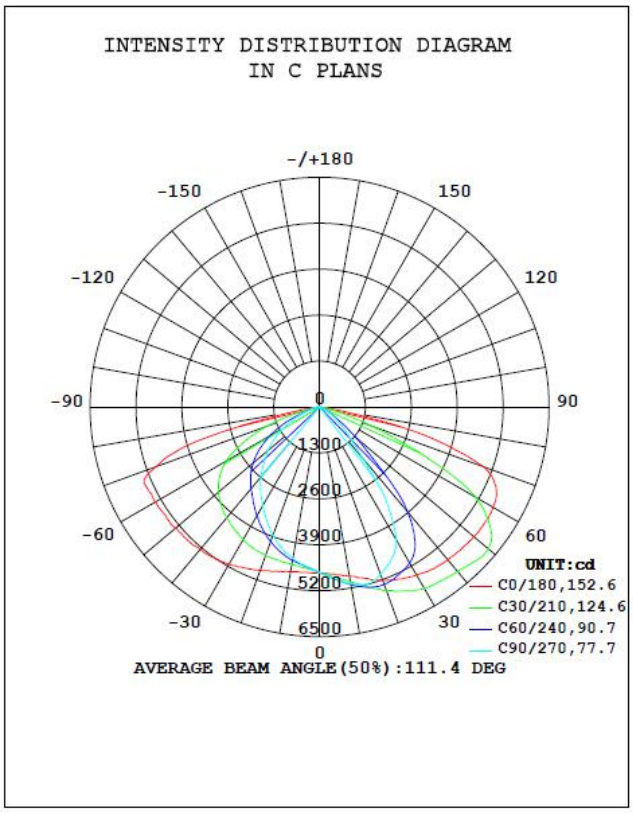
5. Goniophotometer Test results

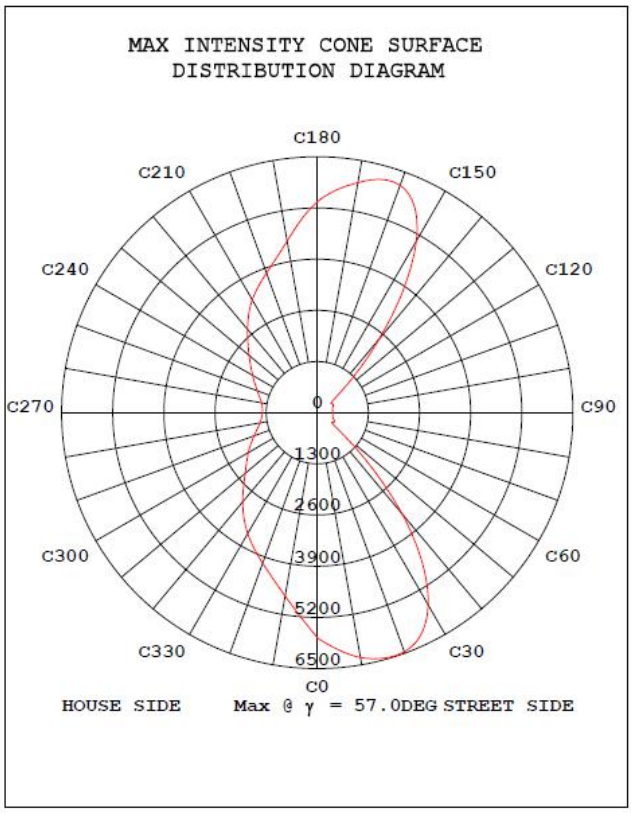
5.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.0	50.00	0.5367	0.9741	114.98

Test type	Total Flux (lm)	Luminous efficacy(lm/W)	Imax (cd)	Spacing Criteria (0~180°)	Spacing Criteria (90~270°)
Output	15284	132.93	6457	-	-

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





Shenzhen LCS Compliance Testing Laboratory Ltd.
Add：B Area, 2F, Building B, Zhongyu Green High-tech Industrial Park, Wenge Road, Heshuikou, Gongming Street, Guangming New District, Shenzhen, China
Tel：+(86) 0755-29871520 | Fax：+(86) 0755-2987 1521 | E-mail：webmaster@lcs-cert.com | http:// www.lcs-cert.com

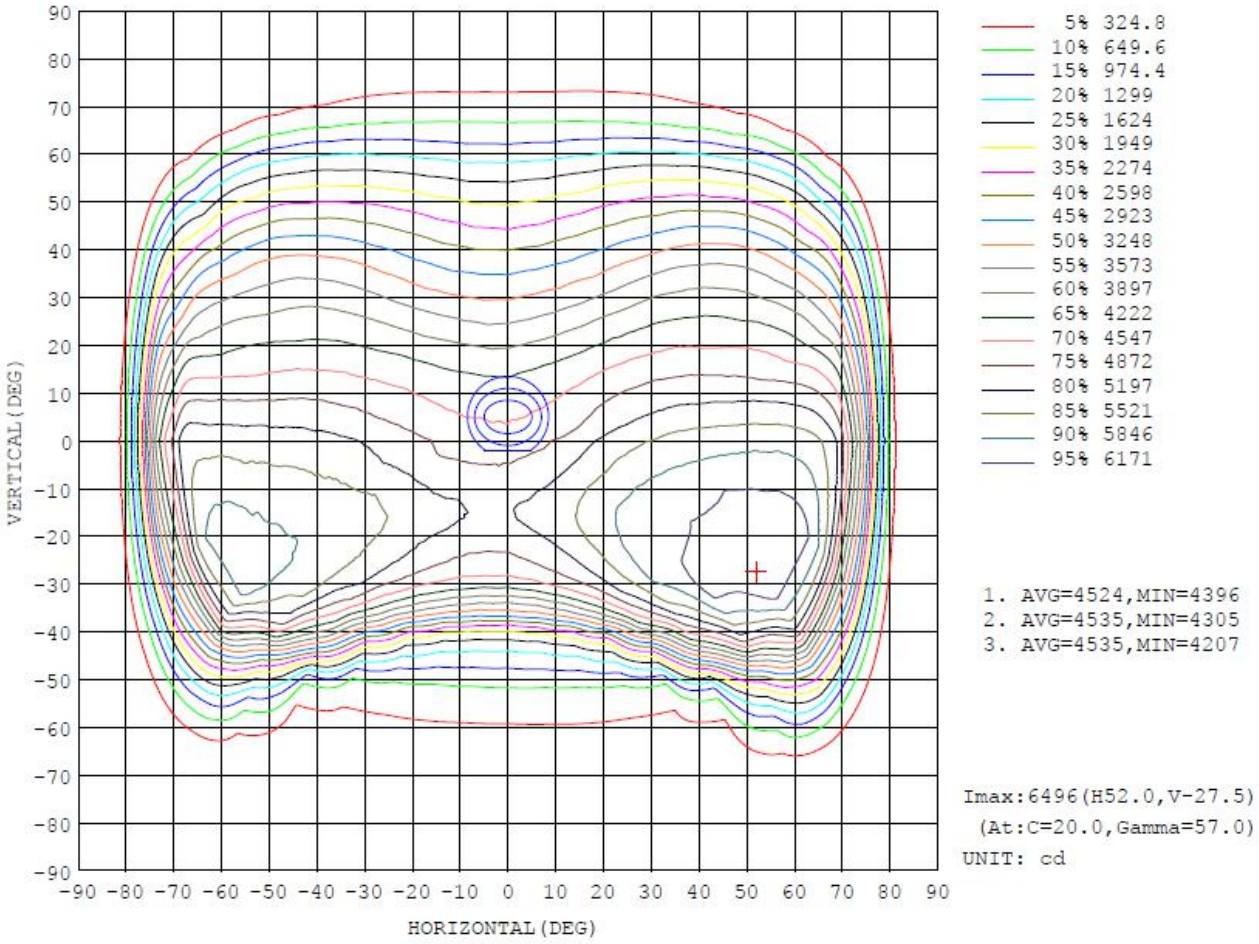
5.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	4855	5069	5075	5006	4730	4454	4352	4555	0- 10	451.5	451.5	2.95,2.95
20	5225	5484	5050	5275	4921	4254	3861	4429	10- 20	1363	1814	11.9,11.9
30	5483	5632	4325	5267	5130	3934	3214	4164	20- 30	2197	4011	26.2,26.2
40	5641	5457	1914	4863	5257	3551	2592	3785	30- 40	2769	6780	44.4,44.4
50	5707	3924	766.5	3227	5322	3067	1909	3243	40- 50	2892	9672	63.3,63.3
60	5678	1281	304.0	796.5	5383	2198	1144	2355	50- 60	2691	12362	80.9,80.9
70	4932	210.0	107.3	176.4	4927	933.4	447.2	941.9	60- 70	2045	14408	94.3,94.3
80	573.6	25.73	2.922	16.58	600.0	159.3	169.5	178.3	70- 80	797.4	15205	99.5,99.5
90	3.186	0.5107	0.1444	0.2186	3.255	0.2537	0.1436	0.2228	80- 90	49.46	15254	99.8,99.8
100	3.831	0.4343	0.1444	0.2186	5.937	0.4040	0.0734	0.3269	90-100	1.187	15256	99.8,99.8
110	5.351	1.448	0.3562	1.530	9.052	2.401	0.2892	1.568	100-110	2.241	15258	99.8,99.8
120	5.931	2.386	1.300	2.690	9.823	5.285	0.9437	4.047	110-120	3.537	15261	99.9,99.9
130	7.733	4.335	3.464	4.406	8.169	5.977	1.809	5.467	120-130	4.209	15266	99.9,99.9
140	9.609	6.437	5.848	6.443	7.954	7.022	4.839	6.852	130-140	4.633	15270	99.9,99.9
150	10.70	8.966	8.232	8.667	8.825	9.376	7.583	9.440	140-150	4.997	15275	99.9,99.9
160	10.77	9.908	9.959	9.581	10.27	10.85	10.83	10.35	150-160	4.516	15280	100,100
170	11.71	11.72	11.41	11.03	10.85	11.65	11.70	11.73	160-170	3.066	15283	100,100
180	13.08	12.77	11.84	11.73	12.36	12.74	11.70	11.88	170-180	1.136	15284	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add：B Area, 2F, Building B, Zhongyu Green High-tech Industrial Park, Wenge Road, Heshuikou, Gongming Street, Guangming New District, Shenzhen, China

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

5.4 Isocandela Diagram



Shenzhen LCS Compliance Testing Laboratory Ltd.
Add：B Area, 2F, Building B, Zhongyu Green High-tech Industrial Park, Wenge Road, Heshuikou, Gongming Street, Guangming New District, Shenzhen, China
Tel：+(86) 0755-29871520 | Fax：+(86) 0755-2987 1521 | E-mail：webmaster@lcs-cert.com | http:// www.lcs-cert.com

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	4688	4688	4688	4688	4688	4688	4688	4688	4688	4688	4688	4688	4688	4688	4688	4688	4688	4688	4688
5	4751	4766	4808	4834	4857	4867	4895	4895	4890	4880	4894	4867	4880	4821	4810	4772	4760	4708	4700
10	4855	4911	4973	5016	5067	5072	5102	5108	5105	5075	5098	5064	5039	5018	4993	4927	4865	4788	4730
15	5022	5120	5199	5270	5293	5280	5285	5239	5220	5178	5195	5191	5189	5182	5148	5057	5007	4898	4808
20	5225	5348	5453	5534	5530	5439	5342	5222	5119	5050	5031	5076	5189	5266	5284	5252	5172	5052	4921
25	5369	5564	5691	5740	5701	5488	5252	5054	4890	4788	4788	4881	5047	5209	5395	5427	5381	5216	5024
30	5483	5724	5884	5927	5803	5461	5094	4775	4475	4325	4386	4559	4835	5114	5420	5566	5561	5357	5130
35	5594	5850	6023	5995	5854	5381	4720	4032	3516	3352	3434	3799	4363	4916	5393	5632	5668	5510	5210
40	5641	5967	6107	6082	5862	5053	3880	2781	2143	1914	2005	2484	3463	4421	5306	5699	5777	5602	5257
45	5680	6098	6180	6188	5638	4325	2363	1569	1275	1198	1235	1425	2008	3618	4959	5748	5841	5701	5310
50	5707	6184	6320	6245	5000	2847	1352	956	813	766	792	889	1184	2159	4300	5663	5951	5787	5322
55	5712	6261	6437	5901	3980	1304	667	524	480	470	471	493	597	986	3166	5272	6103	5853	5339
60	5678	6328	6377	5121	2118	443	366	341	317	304	310	329	351	394	1200	4314	6087	6025	5383
65	5518	6104	5718	3282	624	279	246	225	206	193	200	216	234	261	375	2288	5241	5897	5405
70	4932	4832	4049	1537	252	168	146	129	115	107	111	122	135	152	201	931	3053	4311	4927
75	3072	2621	1847	552	115	78.5	62.9	50.9	42.9	38.5	39.6	44.9	54.8	66.5	90.4	295	1165	2125	3254
80	574	473	332	111	32.8	18.6	10.5	5.03	3.47	2.92	2.93	3.63	6.07	12.0	21.2	49.4	201	342	600
85	28.7	21.3	14.0	5.80	2.69	0.81	0.36	0.36	0.29	0.29	0.29	0.29	0.36	0.29	0.74	2.74	5.76	11.8	23.0
90	3.19	3.17	2.60	1.74	0.72	0.30	0.22	0.29	0.14	0.14	0.15	0.15	0.15	0.15	0.29	0.80	1.62	2.71	3.25
95	2.96	2.74	2.09	1.30	0.58	0.29	0.22	0.14	0.14	0.14	0.15	0.15	0.15	0.15	0.29	0.58	1.39	2.49	4.19
100	3.83	3.32	2.24	1.30	0.58	0.29	0.22	0.14	0.14	0.14	0.15	0.15	0.15	0.15	0.29	1.08	1.61	2.63	5.94
105	4.63	3.89	2.60	1.59	1.31	0.58	0.22	0.14	0.14	0.14	0.15	0.15	0.15	0.44	1.31	1.60	2.63	3.94	7.53
110	5.35	4.54	3.39	2.38	1.60	1.30	1.01	0.58	0.43	0.36	0.36	0.43	0.80	1.31	1.75	2.56	3.94	4.97	9.05
115	5.42	4.62	3.54	2.60	2.31	1.58	1.30	1.23	1.23	1.14	1.16	1.23	1.31	1.67	2.48	3.57	4.54	5.93	9.98
120	5.93	4.83	3.68	2.89	2.39	2.38	1.73	1.52	1.44	1.30	1.23	1.52	1.67	2.40	2.98	3.65	4.61	6.22	9.82
125	6.86	5.84	4.75	4.10	3.62	3.18	2.74	2.74	2.38	2.45	2.46	2.54	2.98	3.56	3.87	4.74	5.85	7.24	8.53
130	7.73	6.85	5.70	5.06	4.63	4.04	3.69	3.83	3.69	3.46	3.55	3.63	4.07	4.14	4.67	5.77	6.73	8.27	8.17
135	8.31	7.21	6.28	5.85	5.86	4.62	4.70	4.77	4.55	4.47	4.56	4.57	4.88	4.86	5.69	6.42	7.24	8.34	7.81
140	9.61	8.94	8.01	7.50	6.88	5.99	6.14	6.15	5.93	5.85	5.87	5.88	6.54	6.40	6.49	7.81	9.29	10.2	7.95
145	10.6	9.60	9.17	8.45	8.18	7.59	7.94	7.59	7.38	6.86	6.96	7.40	7.43	7.71	7.52	8.25	9.30	10.6	8.10
150	10.7	10.3	9.67	9.31	9.05	8.88	8.75	8.61	8.53	8.23	8.19	8.21	8.37	8.65	8.68	8.76	9.37	10.7	8.83
155	10.7	10.6	10.2	9.89	9.57	9.39	9.33	9.41	9.19	9.16	8.84	9.14	9.17	9.23	9.56	9.49	9.88	10.7	9.55
160	10.8	10.7	10.4	10.1	9.92	9.89	10.2	10.3	9.97	9.96	9.64	9.37	9.68	9.60	9.56	9.71	9.96	10.8	10.3
165	11.6	11.6	10.8	10.5	10.8	10.6	11.0	10.9	10.5	10.5	10.6	10.1	10.6	10.3	10.5	10.6	10.8	11.1	10.3
170	11.7	11.8	11.7	11.6	11.7	11.8	11.9	11.7	11.3	11.4	11.5	10.9	11.6	10.9	11.2	11.2	11.6	11.7	10.8
175	12.9	12.8	12.4	12.6	12.8	12.8	12.5	12.5	11.8	11.8	12.0	11.7	11.9	11.6	11.8	11.8	11.9	12.0	12.3
180	13.1	12.8	12.6	12.6	12.8	12.8	12.4	12.4	11.7	11.8	12.0	11.6	11.9	11.7	11.8	11.8	11.9	12.0	12.4

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add：B Area, 2F, Building B, Zhongyu Green High-tech Industrial Park, Wenge Road, Heshuikou, Gongming Street, Guangming New District, Shenzhen, China

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

6. Photo of sample:

1

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

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add：B Area, 2F, Building B, Zhongyu Green High-tech Industrial Park, Wenge Road, Heshuikou, Gongming Street, Guangming New District, Shenzhen, China
Tel：+(86) 0755-29871520 | Fax：+(86) 0755-2987 1521 | E-mail：webmaster@lcs-cert.com | http:// www.lcs-cert.com