



Testing Lab.

Shenzhen Southern LCS Compliance Testing Laboratory Ltd.



TESTING
NVLAP LAB CODE 600112-0

Report No.: LCS200918053BS

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 Southern 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-52-240W-TC10
Rating..... : AC220V, 50/60Hz, 240W, 4000K
Date of Test..... : September 18, 2020
Date of Issue..... : September 23, 2020

Test by:

William Lian

William Lian/ Project Engineer

Check by:

Ian Luo

Ian Luo/ Director

Approved by:



Jesse Liu/ Manager

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1. Test Method

Test Item.....	: Integrating Sphere Test
Ambient Condition	: 25.1℃
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℃
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.

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2. Product Information

Product description.....:	LED Street Light
Model Number.....:	ST-52-240W-TC10
Rated Inputs.....:	AC220V, 50/60Hz
Rated Power.....:	240W
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.....:	September 18, 2020
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	2020/07/02	2021/07/01
EVERFINE	Digital Power Meter	SLCS-S-103	PF2010	2020/06/24	2021/06/23
EVERFINE	AC Testing Power Source	SLCS-S-115	DPS1060	2020/06/24	2021/06/23
EVERFINE	Total Spectral Radiant Flux Standard Lamp	SLCS-S-143	D908S	2020/07/02	2021/07/01
SENSING	2 Meter Integrating Sphere	SLCS-S-038	SPR-3000	2020/07/02	2021/07/01
YOKOGAWA	Digital Power Meter	SLCS-S-058	WT310	2020/06/24	2021/06/23
ALL POWER ELECTRONIC	AC Testing Power Source	SLCS-S-111	APW-105N	2020/06/24	2021/06/23
SENSING	Standard Lamp	SLCS-S-118	S11010017	2020/07/02	2021/07/01



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4. Integrating Sphere Test Results:

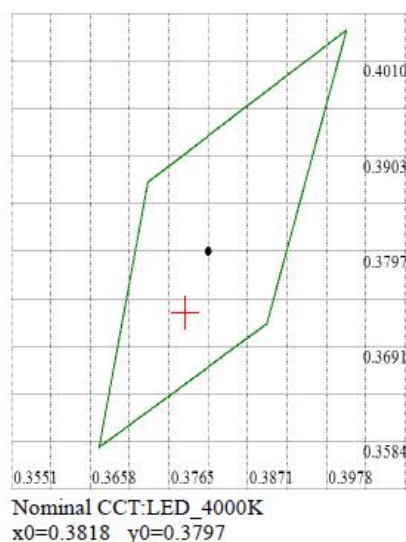
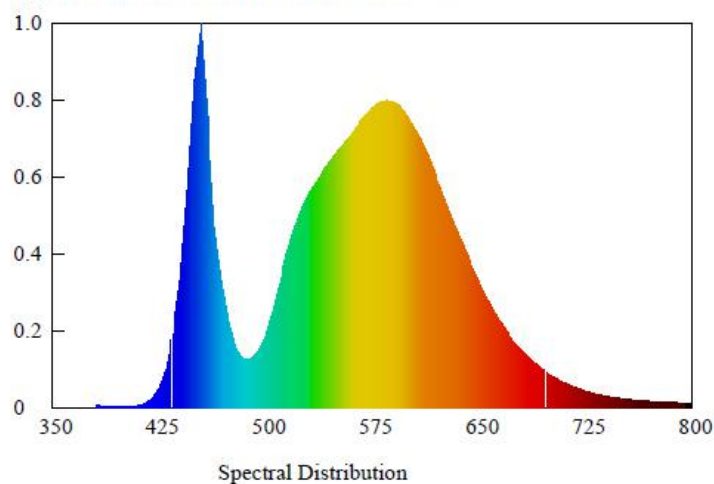
4.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.04	50.0	1.1016	0.9775	236.95

Test type	CCT (K)	CRI	Duv	Luminous flux (lm)	Luminous efficacy(lm/W)
Output	4022	74.0	-0.00131	31054.67	131.06

4.2 Spectrum

Spectroradiometric Parameters



Chromaticity Coordinates: $x=0.3786$ $y=0.3728$ $u'=0.2255$ $v'=0.4996$

Correlated Color Temperature: 4022 K

Colour Fidelity Index: $R_f=72$

Luminous Flux: 31054.67 lm

Chromaticity Difference: -0.00131Duv

Color Ratio: $K_r=37.8\%$ $K_g=55.1\%$ $K_b=7.1\%$

Bandwidth: 17nm

Photosynthetically Active Radiation(PAR): 95.84W

Rendering Index: $R_a=74.0$

$R_1=72$ $R_2=82$ $R_3=89$ $R_4=71$ $R_5=70$ $R_6=73$ $R_7=82$ $R_8=54$

$R_9=-22$ $R_{10}=56$ $R_{11}=65$ $R_{12}=41$ $R_{13}=75$ $R_{14}=93$ $R_{15}=67$ $R_e=64$

Dominant Wavelength: 578.0 nm(E)

Gamut Index: $R_g=92$

Purity: 0.2555

Peak Wavelength: 455.0 nm

Radiant Flux: 98.122 W

Photosynthetic Photon Flux(PPF):450.25 μ mol/s



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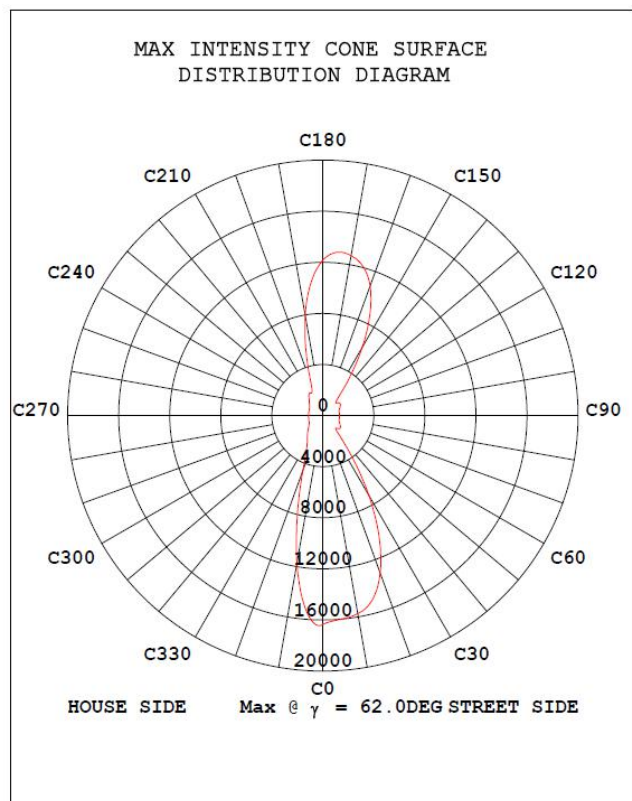
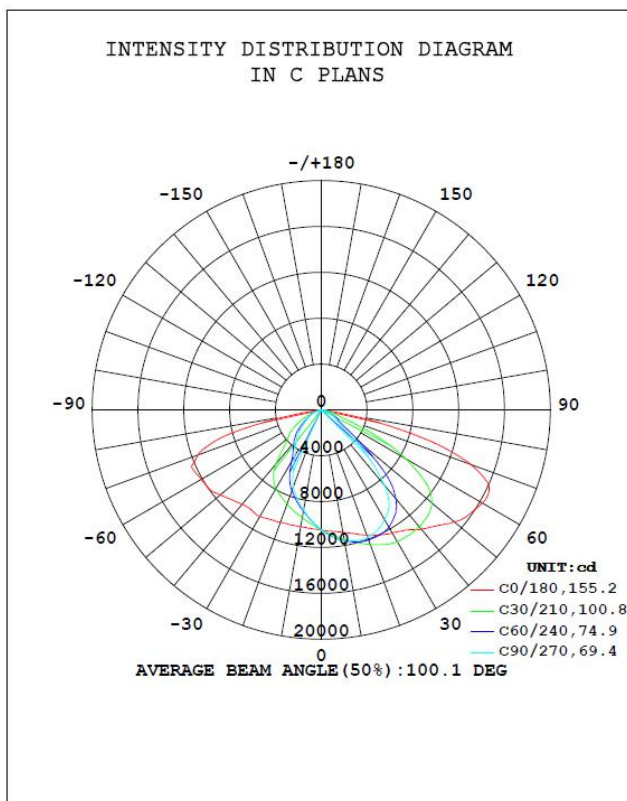
5. Goniophotometer Test results

5.1 Test Data

Test type	Voltage (V AC)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
Input	220.1	50.00	1.101	0.9775	236.9

Test type	Total Flux (lm)	Luminous efficacy(lm/W)	ZL (0~90°)	ZL (80~90°)
Output	31041.4	131.00	100%	0.5%

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





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5.3 Zonal Flux Diagram

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	1084	1155	1155	1118	1035	924.3	889.1	956.5	0- 10	995.2	995.2	3.21, 3.21
20	1160	1234	1181	1164	1044	807.0	716.3	863.2	10- 20	2921	3916	12.6, 12.6
30	1239	1259	1105	1180	1072	654.1	462.6	725.6	20- 30	4595	8511	27.4, 27.4
40	1359	1154	857.2	1099	1073	436.6	336.2	477.7	30- 40	5713	14224	45.8, 45.8
50	1518	808.1	293.0	756.6	1154	306.0	215.0	342.0	40- 50	5896	20120	64.8, 64.8
60	1620	223.3	142.0	218.8	1211	177.7	125.3	197.3	50- 60	4988	25108	80.9, 80.9
70	1388	99.67	82.10	98.67	1146	79.09	67.94	81.17	60- 70	3862	28970	93.3, 93.3
80	200.3	31.09	25.02	28.89	240.1	17.60	6.650	19.36	70- 80	1919	30889	99.5, 99.5
90	0	0	0	0	0	0	0.0079	0	80- 90	152.6	31041	100, 100
100	0	0	0	0	0	0	0	0	90-100	0.0007	31041	100, 100
110	0	0	0	0	0	0	0	0	100-110	0	31041	100, 100
120	0	0	0	0	0	0	0	0	110-120	0	31041	100, 100
130	0	0	0	0	0	0	0	0	120-130	0	31041	100, 100
140	0	0	0	0	0	0	0	0	130-140	0	31041	100, 100
150	0	0	0	0	0	0	0	0	140-150	0	31041	100, 100
160	0	0	0	0	0	0	0	0	150-160	0	31041	100, 100
170	0	0	0	0	0	0	0	0	160-170	0	31041	100, 100
180	0	0	0	0	0	0	0	0	170-180	0	31041	100, 100
DEG	LUMINOUS INTENSITY: ×10cd									UNIT: lm		



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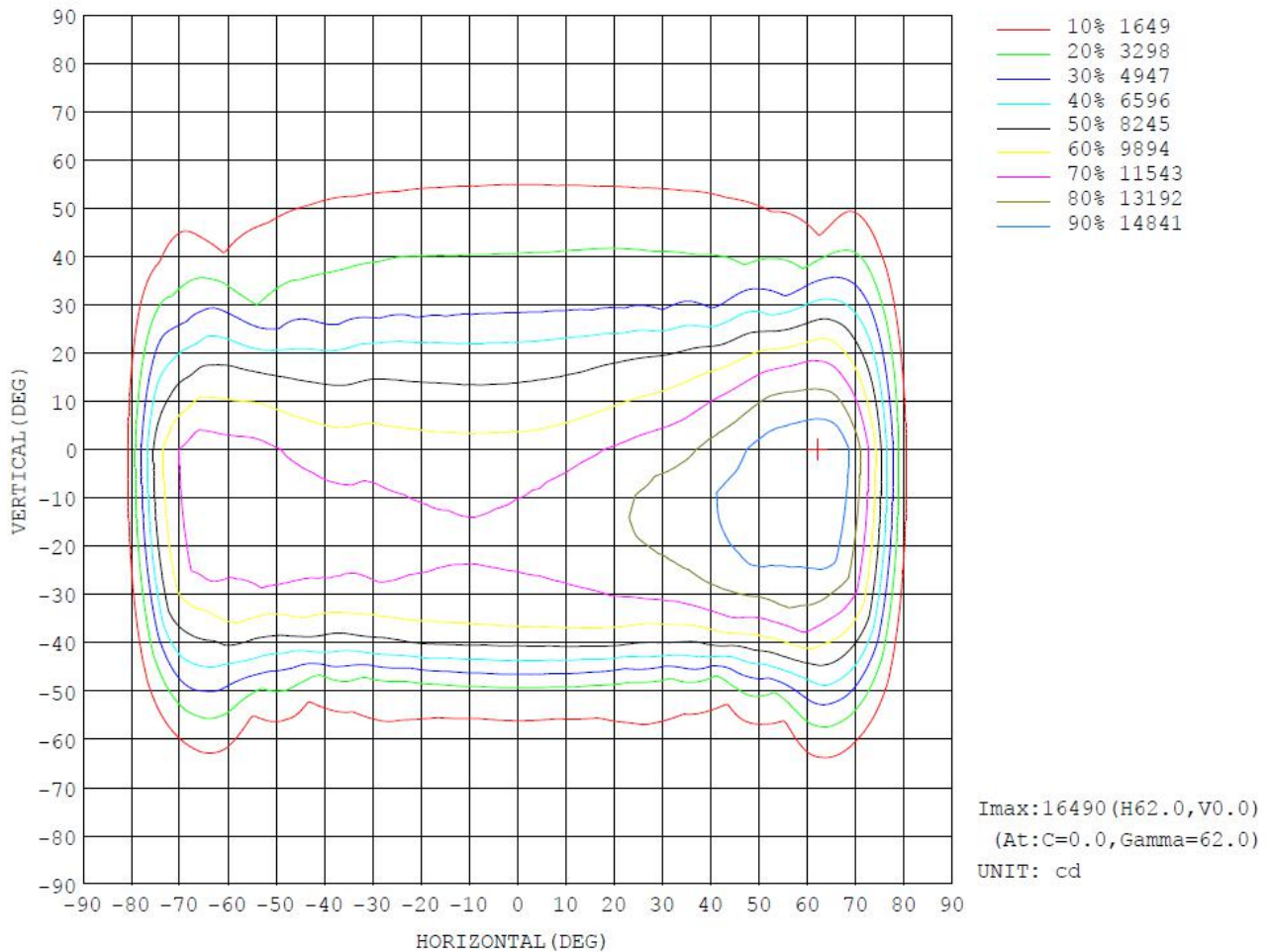
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5.4 Isocandela Diagram





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5.5 Luminous Distribution Intensity Data

Table--1

UNIT: $\times 10\text{cd}$

γ (DEG) \ C (DEG)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
0	1047	1047	1047	1047	1047	1047	1047	1047	1047	1047	1047	1047	1047	1047	1047	1047	1047	1047	1047
5	1062	1073	1085	1094	1101	1108	1108	1112	1113	1112	1106	1104	1097	1091	1082	1071	1059	1050	1038
10	1084	1107	1128	1144	1151	1160	1157	1161	1157	1155	1148	1142	1133	1124	1111	1097	1079	1056	1035
15	1117	1155	1183	1197	1199	1201	1192	1189	1185	1181	1172	1165	1158	1148	1140	1125	1102	1073	1038
20	1160	1209	1240	1247	1241	1227	1208	1197	1187	1181	1172	1169	1169	1165	1163	1153	1130	1094	1044
25	1204	1266	1297	1294	1271	1236	1206	1186	1169	1159	1156	1159	1166	1174	1182	1181	1162	1121	1054
30	1239	1315	1344	1328	1283	1234	1181	1141	1114	1105	1101	1114	1141	1170	1189	1205	1199	1155	1072
35	1281	1367	1382	1335	1266	1190	1122	1070	1040	1029	1027	1048	1085	1131	1193	1218	1217	1163	1065
40	1359	1443	1425	1332	1213	1095	1014	942	881	857	873	923	980	1055	1143	1192	1219	1190	1073
45	1428	1512	1458	1312	1109	927	806	672	603	583	598	661	791	891	1033	1159	1235	1234	1108
50	1518	1572	1469	1262	931	685	461	367	308	293	305	359	455	660	854	1100	1227	1273	1154
55	1581	1598	1449	1120	684	317	228	185	173	174	173	185	225	309	634	974	1208	1294	1199
60	1620	1585	1366	848	265	181	168	149	142	142	142	148	165	178	260	728	1125	1275	1211
65	1617	1557	1209	509	149	135	129	117	113	112	113	117	129	135	146	448	993	1273	1235
70	1388	1362	885	203	103	96.8	89.6	84.4	82.0	82.1	81.6	84.1	89.3	96.3	101	191	723	1161	1146
75	858	929	515	99.9	64.6	61.4	56.6	53.3	50.1	49.8	49.8	52.6	56.0	59.9	62.4	94.0	438	863	866
80	200	258	157	50.7	32.0	30.2	28.1	25.9	25.0	25.0	24.7	25.3	27.0	28.4	29.4	45.6	143	258	240
85	15.2	18.8	20.0	12.1	8.89	8.26	7.85	7.76	7.61	7.51	7.39	7.34	7.07	7.14	7.29	9.47	15.0	14.9	14.3
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



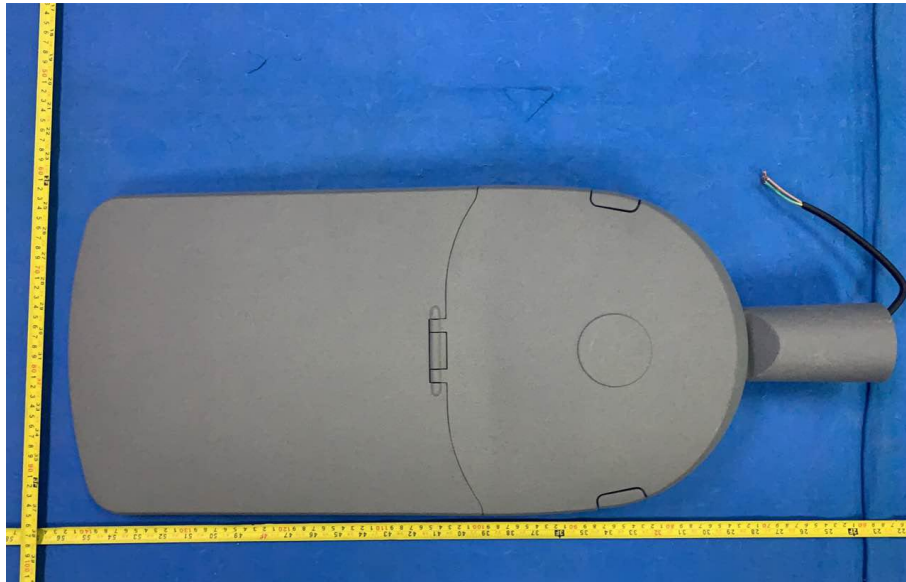
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6. Photo of sample:



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