



Verification Report

Applicant : Sundopt LED Lighting Co., Ltd.
Address : Bldg 8-6#, TongFuYu Industrial Park Ai Qun Rd Shiyan Town Baoan District Shenzhen, Guangdong 518108

Report on the submitted samples said to be:

Sample Name(s) : LED Luminaires
Trade Mark : SUNDOPT
Part No. : PLF1-D120- 038C-I0-ZZ, PLF1-I120- 038C-I0-ZZ, PLF1-D120- 052C-I0-ZZ
PLF1-I120- 052C-I0-ZZ, PLF1-D150- 048C-I0-ZZ , PLF1-I150- 048C-I0-ZZ
PLF1-I150- 065C-I0-ZZ, PLF1-D150- 065C-I0-ZZ
Sample Received Date : September 06, 2022
Testing Period : September 06, 2022 ~ September 15, 2022
Date of Report : September 15, 2022
Testing Location : 901, No.40 Building, Xialang Industrial Zone, Heshuikou Community, Matian Street, Guangming District, Shenzhen, Guangdong, China
Results : Please refer to next page(s).

TEST REQUEST	CONCLUSION
As specified by client, based on the performed tests on submitted sample, the result of Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), PBBs, PBDEs, Dibutyl Phthalate(DBP), Butylbenzyl Phthalate(BBP), Di-2-ethylhexyl Phthalate(DEHP) and Diisobutyl phthalate(DIBP) content comply with the limits set by RoHS Directive 2011/65/EU with amendment (EU) 2015/863.	PASS

Signed for and on behalf of LCS

Young/Laboratory Manager



Shenzhen LCS Compliance Testing Laboratory Ltd.
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Scan code to check authenticity

**Results:****A. EU RoHS Directive 2011/65/EU and its amendment directives**

Test method: With reference to IEC 62321-1:2013&IEC 62321-2:2021&IEC 62321-3-1:2013, Screening by X-ray Fluorescence Spectroscopy (XRF)

Sample No.	Sample Description	Results						Date of sample submission/ Resubmission
		Cd	Pb	Hg	Cr▼	Br▼		
						PBBs	PBDEs	
1	Milky plastic sheet	BL	BL	BL	BL	BL	BL	2022-09-06
2	Milky plastic sheet	BL	BL	BL	BL	BL	BL	2022-09-06
3	White metal shell	BL	BL	BL	BL	/	/	2022-09-06
4	Milky plastic sheet	BL	BL	BL	BL	BL	BL	2022-09-06
5	White plastic sheet	BL	BL	BL	BL	BL	BL	2022-09-06
6	Silver metal screw	BL	BL	BL	BL	/	/	2022-09-06
7	Yellow plastic lamp beads	BL	BL	BL	BL	BL	BL	2022-09-06
8	Silver metal sheet	BL	BL	BL	BL	/	/	2022-09-06
9	White plastic ring	BL	BL	BL	BL	BL	BL	2022-09-06
10	White metal sheet	BL	BL	BL	BL	/	/	2022-09-06
11	Tin solder	BL	BL	BL	BL	/	/	2022-09-06
12	Silver metal ring	BL	BL	BL	BL	/	/	2022-09-06
13	Red plastic ring	BL	BL	BL	BL	BL	BL	2022-09-06
14	White plastic tape	BL	BL	BL	BL	BL	BL	2022-09-06
15	White plastic sheet	BL	BL	BL	BL	BL	BL	2022-09-06
16	Gold metal ring	BL	BL	BL	BL	/	/	2022-09-06
17	White plastic adhesive	BL	BL	BL	BL	BL	BL	2022-09-06
18	Silver metal sheet	BL	BL	BL	BL	/	/	2022-09-06
19	White plastic adhesive	BL	BL	BL	BL	BL	BL	2022-09-06
20	Black plastic thread	BL	BL	BL	BL	BL	BL	2022-09-06
21	Milky plastic sheet	BL	BL	BL	BL	BL	BL	2022-09-06
22	White plastic thread	BL	BL	BL	BL	BL	BL	2022-09-06
23	Silver metal screw	BL	BL	BL	BL	/	/	2022-09-06
24	White plastic tie	BL	BL	BL	BL	BL	BL	2022-09-06
25	Red plastic thread	BL	BL	BL	BL	BL	BL	2022-09-06
26	Black plastic thread	BL	BL	BL	BL	BL	BL	2022-09-06
27	Silver copper wire	BL	BL	BL	BL	/	/	2022-09-06
28	Transparent plastic sheet	BL	BL	BL	BL	BL	BL	2022-09-06
29	Orange plastic sheet	BL	BL	BL	BL	BL	BL	2022-09-06





Sample No.	Sample Description	Results						Date of sample submission/ Resubmission
		Cd	Pb	Hg	Cr▼	Br▼		
						PBBs	PBDEs	
30	Silver metal sheet	BL	BL	BL	BL	/	/	2022-09-06
31	Silver metal sheet	BL	BL	BL	BL	/	/	2022-09-06
32	Red plastic sheet	BL	BL	BL	BL	BL	BL	2022-09-06
33	Grey metal spring	BL	BL	BL	BL	/	/	2022-09-06
34	Black plastic sheet	BL	BL	BL	BL	BL	BL	2022-09-06
35	Black plastic sheet	BL	BL	BL	BL	BL	BL	2022-09-06
36	White plastic sheet	BL	BL	BL	BL	BL	BL	2022-09-06
37	Gold metal sheet	BL	BL	BL	BL	/	/	2022-09-06
38	Black plastic sheet	BL	BL	BL	BL	BL	BL	2022-09-06
39	Brown plastic thread	BL	BL	BL	BL	BL	BL	2022-09-06
40	Silver copper wire	BL	BL	BL	BL	/	/	2022-09-06
41	Transparent plastic outer sheath	BL	BL	BL	BL	BL	BL	2022-09-06
42	Yellow plastic thread	BL	BL	BL	BL	BL	BL	2022-09-06
43	Blue plastic thread	BL	BL	BL	BL	BL	BL	2022-09-06
44	Brown plastic thread	BL	BL	BL	BL	BL	BL	2022-09-06
45	Silver copper wire	BL	BL	BL	BL	/	/	2022-09-06





Note:

1. Results were obtained by XRF for primary screening, and further chemical testing by ICP(for Cd, Pb, Hg), UV-Vis(for Cr(VI)) and GC-MS(for PBBs, PBDEs) are recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321-3-1:2013(Unit: mg/kg).

Element	Polymers	Metals	Composite material
Cd	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X < (130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma) \leq OL$
Pb	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Hg	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Cr	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$
Br	$BL \leq (300-3\sigma) < X$	N/A	$BL \leq (250-3\sigma) < X$

Remark:

- BL= Below Limit
 - OL= Over Limit
 - X= The range of needing to do further testing
 - 3σ = The reproducibility of analytical instruments
 - N/A= Not applicable
 - LOD= Detection limit
2. The XRF screening test for RoHS elements – The reading may be different to the actual content in the sample be of non-uniformity composition.
 3. The maximum permissible limit is quoted from the document RoHS Directive 2011/65/EU with amendment (EU) 2015/863.
 4. ▼=For restricted substances PBBs and PBDEs, the results show the total Br content, the restricted substance was Cr(VI), and the results showed the total Cr content.





RoHS Restricted Substances	Maximum Concentration Value (mg/kg) (by weight in homogenous materials)
Cadmium(Cd)	100
Lead(Pb)	1000
Mercury(Hg)	1000
Hexavalent Chromium(Cr(VI))	1000
Polybrominated biphenyls(PBBs)	1000
Polybrominated diphenylethers(PBDEs)	1000
Dibutyl Phthalate(DBP)	1000
Butylbenzyl Phthalate(BBP)	1000
Di-(2-ethylhexyl) Phthalate(DEHP)	1000
Diisobutyl phthalate(DIBP)	1000

Disclaimers:

This XRF Screening report is for reference purposes only. The applicant shall make its/his/her own judgment as to whether the information provided in this XRF screening report is sufficient for its/his/her purposes. The result shown in this XRF screening report will differ based on various factors, including but not limited to, the sample size, thickness, area, surface flatness, equipment parameters and matrix effect (e.g. plastic, rubber, metal, glass, ceramic etc.). Further wet chemical pre-treatment with relevant chemical equipment analysis are required to obtain quantitative data.



**B. EU RoHS Directive 2011/65/EU with amendment (EU) 2015/863 on Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), PBBs, PBDEs, DBP, BBP, DEHP & DIBP content****Test method:****Lead(Pb) & Cadmium(Cd) Content:**

With reference to IEC 62321-5:2013, by acid digestion and analysis was performed by inductively coupled plasma atomic emission spectrometer (ICP-OES) or Atomic absorption spectrometer (AAS).

Mercury(Hg) Content:

With reference to IEC 62321-4:2013+AMD1:2017 CSV, by acid digestion and analysis was performed by inductively coupled plasma atomic emission spectrometer (ICP-OES).

Hexavalent Chromium(Cr(VI)) Content:

With reference to IEC 62321-7-1:2015 or IEC 62321-7-2:2017, analysis was performed by UV-visible spectrophotometer (UV-Vis).

PBBs & PBDEs Content:

With reference to IEC 62321-6:2015, by solvent extraction and analysis was performed by gas chromatographic-mass spectrometer (GC-MS).

Phthalates(DBP, BBP, DEHP & DIBP) Content:

With reference to IEC 62321-8:2017, by solvent extraction and analysis was performed by gas chromatographic-mass spectrometer (GC-MS).

1) The test results of Phthalates(DBP, BBP, DEHP & DIBP)

Tested Items	MDL (mg/kg)	Results (mg/kg)	Limit (mg/kg)
		1+2+4+5+7+9	
Dibutyl Phthalate(DBP) Content	600	N.D.	1000
Butylbenzyl Phthalate(BBP) Content	600	N.D.	1000
Di-(2-ethylhexyl) Phthalate(DEHP) Content	600	N.D.	1000
Diisobutyl phthalate(DIBP) Content	600	N.D.	1000

Tested Items	MDL (mg/kg)	Results (mg/kg)	Limit (mg/kg)
		13+14+15+17+19+20	
Dibutyl Phthalate(DBP) Content	600	N.D.	1000
Butylbenzyl Phthalate(BBP) Content	600	N.D.	1000
Di-(2-ethylhexyl) Phthalate(DEHP) Content	600	N.D.	1000
Diisobutyl phthalate(DIBP) Content	600	N.D.	1000





Tested Items	MDL (mg/kg)	Results (mg/kg)	Limit (mg/kg)
		21+22+24+25+26+28	
Dibutyl Phthalate(DBP) Content	600	N.D.	1000
Butylbenzyl Phthalate(BBP) Content	600	N.D.	1000
Di-(2-ethylhexyl) Phthalate(DEHP) Content	600	N.D.	1000
Diisobutyl phthalate(DIBP) Content	600	N.D.	1000

Tested Items	MDL (mg/kg)	Results (mg/kg)	Limit (mg/kg)
		29+32+34+35+36+38	
Dibutyl Phthalate(DBP) Content	600	N.D.	1000
Butylbenzyl Phthalate(BBP) Content	600	N.D.	1000
Di-(2-ethylhexyl) Phthalate(DEHP) Content	600	N.D.	1000
Diisobutyl phthalate(DIBP) Content	600	N.D.	1000

Tested Items	MDL (mg/kg)	Results (mg/kg)	Limit (mg/kg)
		39+41+42+43+44	
Dibutyl Phthalate(DBP) Content	600	N.D.	1000
Butylbenzyl Phthalate(BBP) Content	600	N.D.	1000
Di-(2-ethylhexyl) Phthalate(DEHP) Content	600	N.D.	1000
Diisobutyl phthalate(DIBP) Content	600	N.D.	1000

Note:

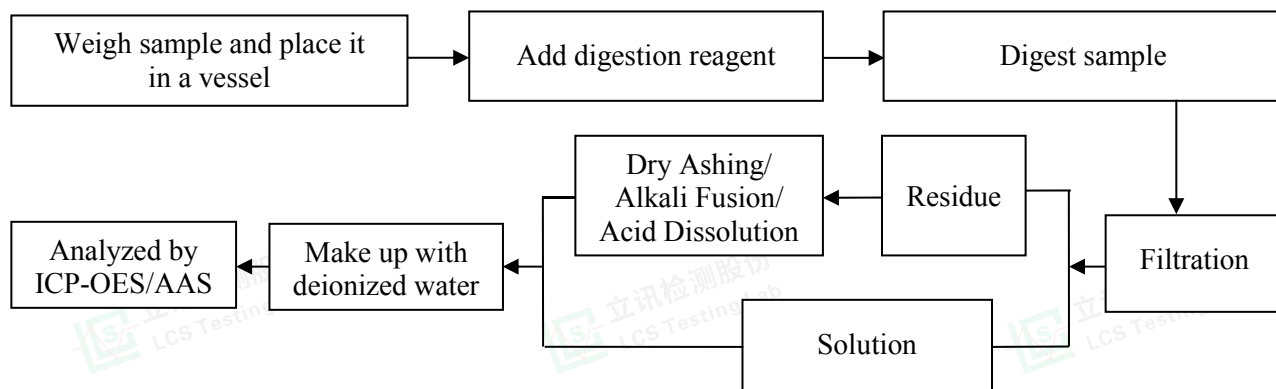
- MDL = Method Detection Limit
- N.D. = Not Detected (<MDL)
- mg/kg = milligrams per kilogram
- According to customer's requirement, only the appointed materials have been tested.



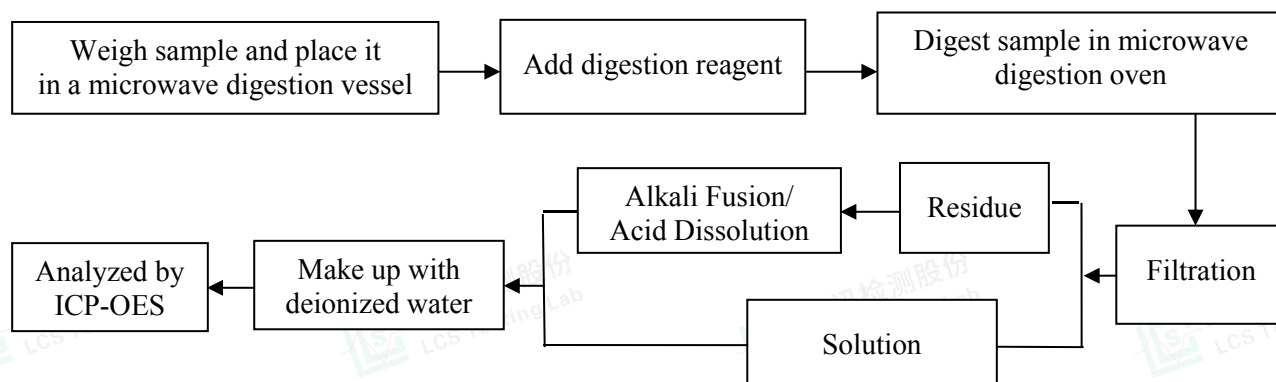


Test Process

1. Lead(Pb) & Cadmium(Cd): IEC 62321-5:2013

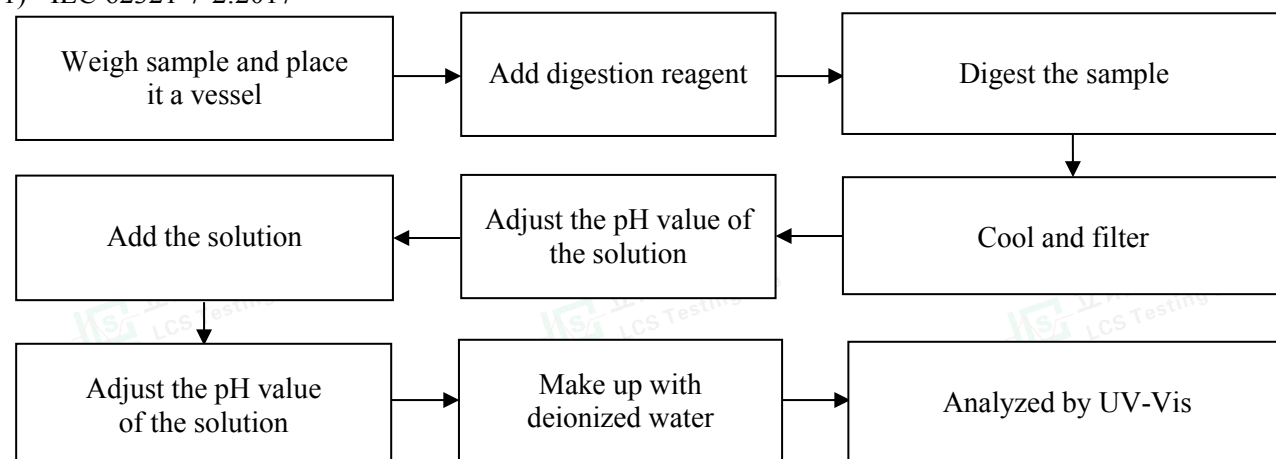


2. Mercury(Hg): IEC 62321-4:2013+AMD1:2017 CSV



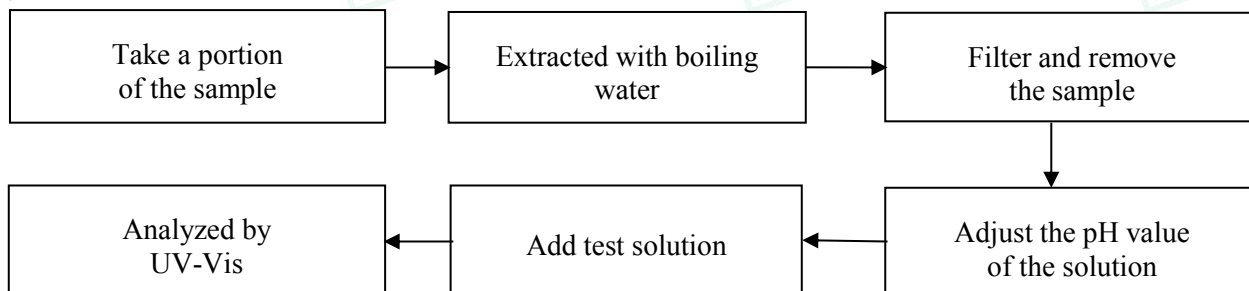
3. Hexavalent Chromium(Cr(VI))

1) IEC 62321-7-2:2017

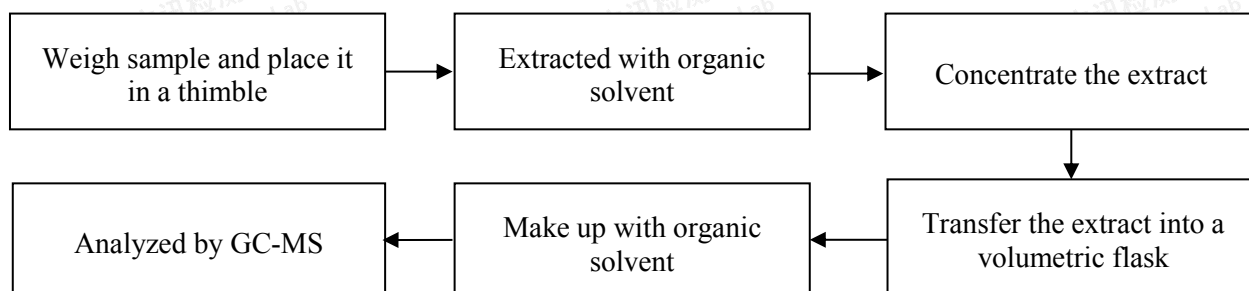




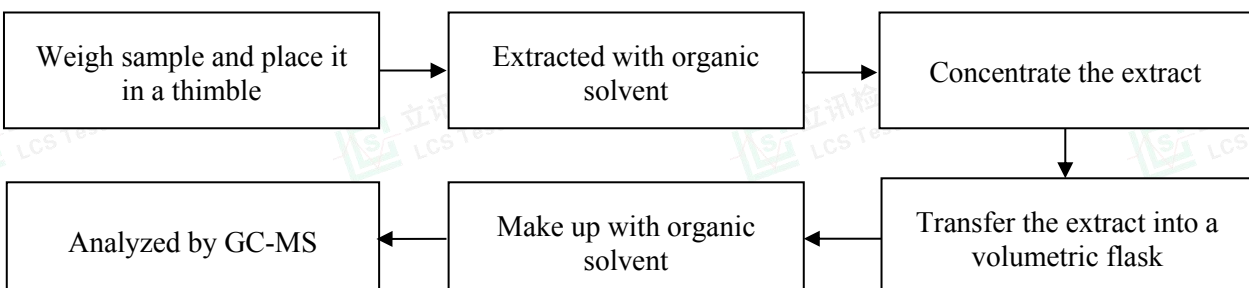
2) IEC 62321-7-1:2015



4. Polybrominated Biphenyls(PBBs) & Polybrominated Diphenyl Ethers(PBDEs) : IEC 62321-6:2015

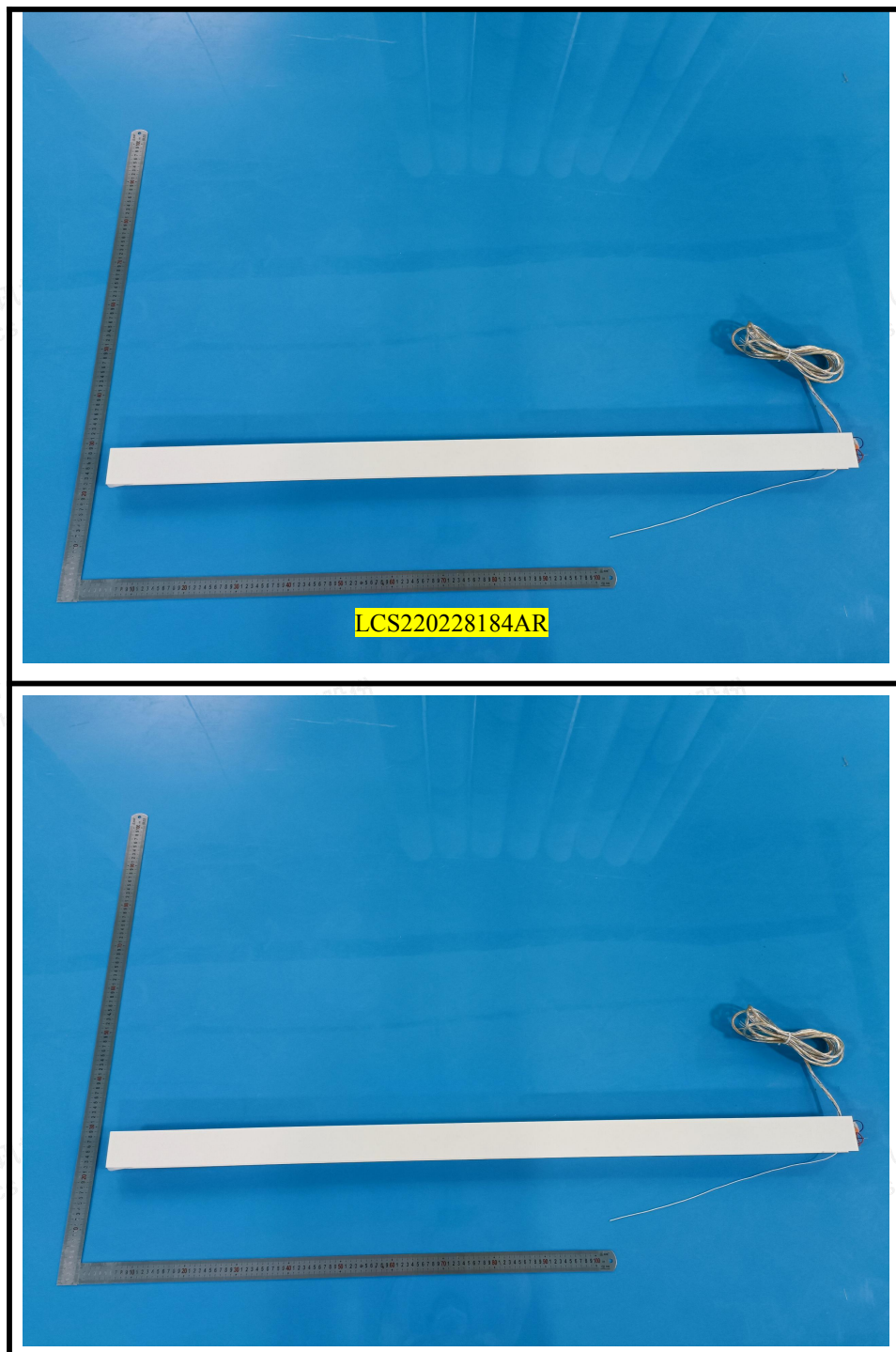


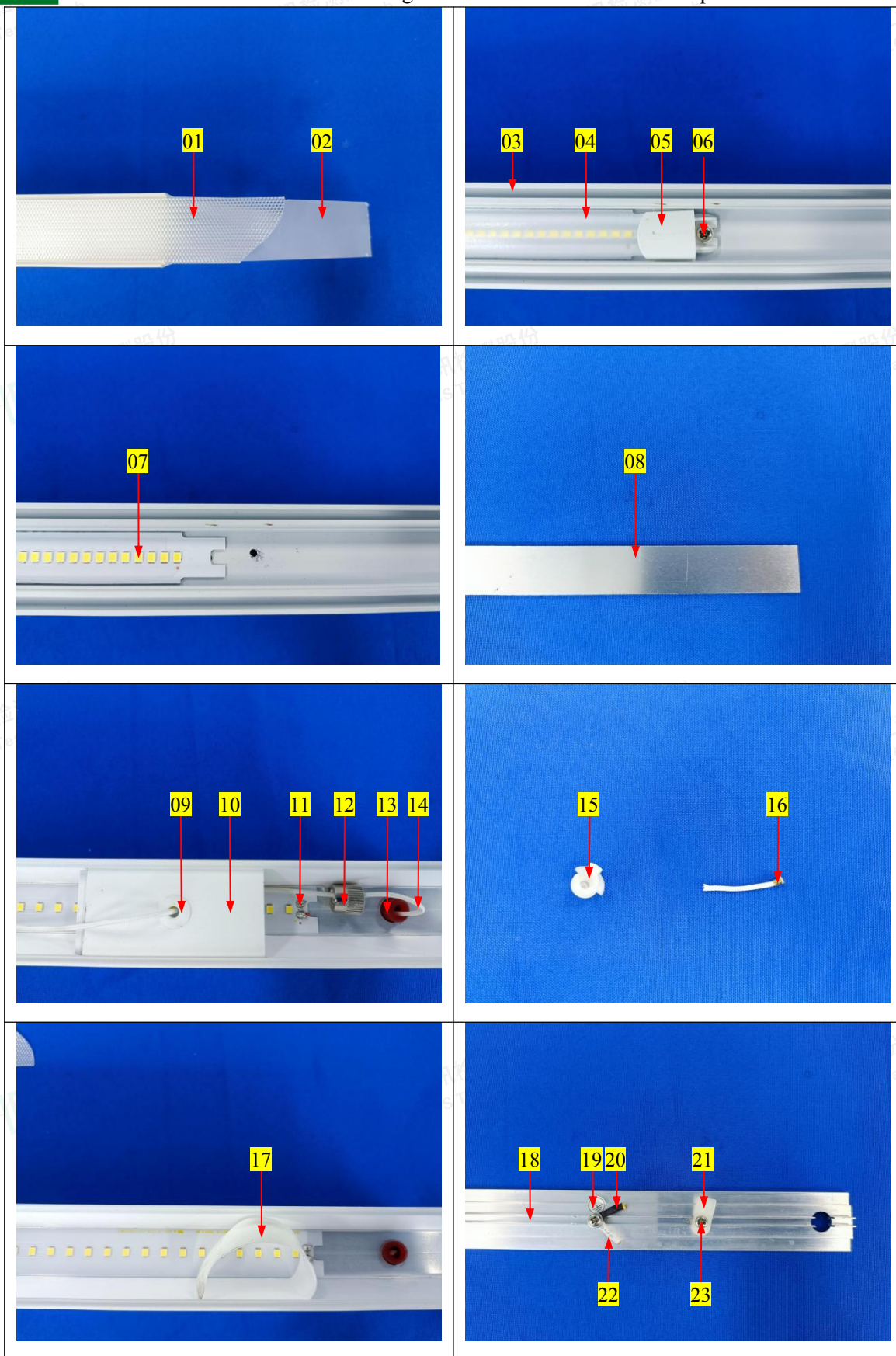
5. Phthalates(DBP, BBP, DEHP & DIBP) : IEC 62321-8:2017

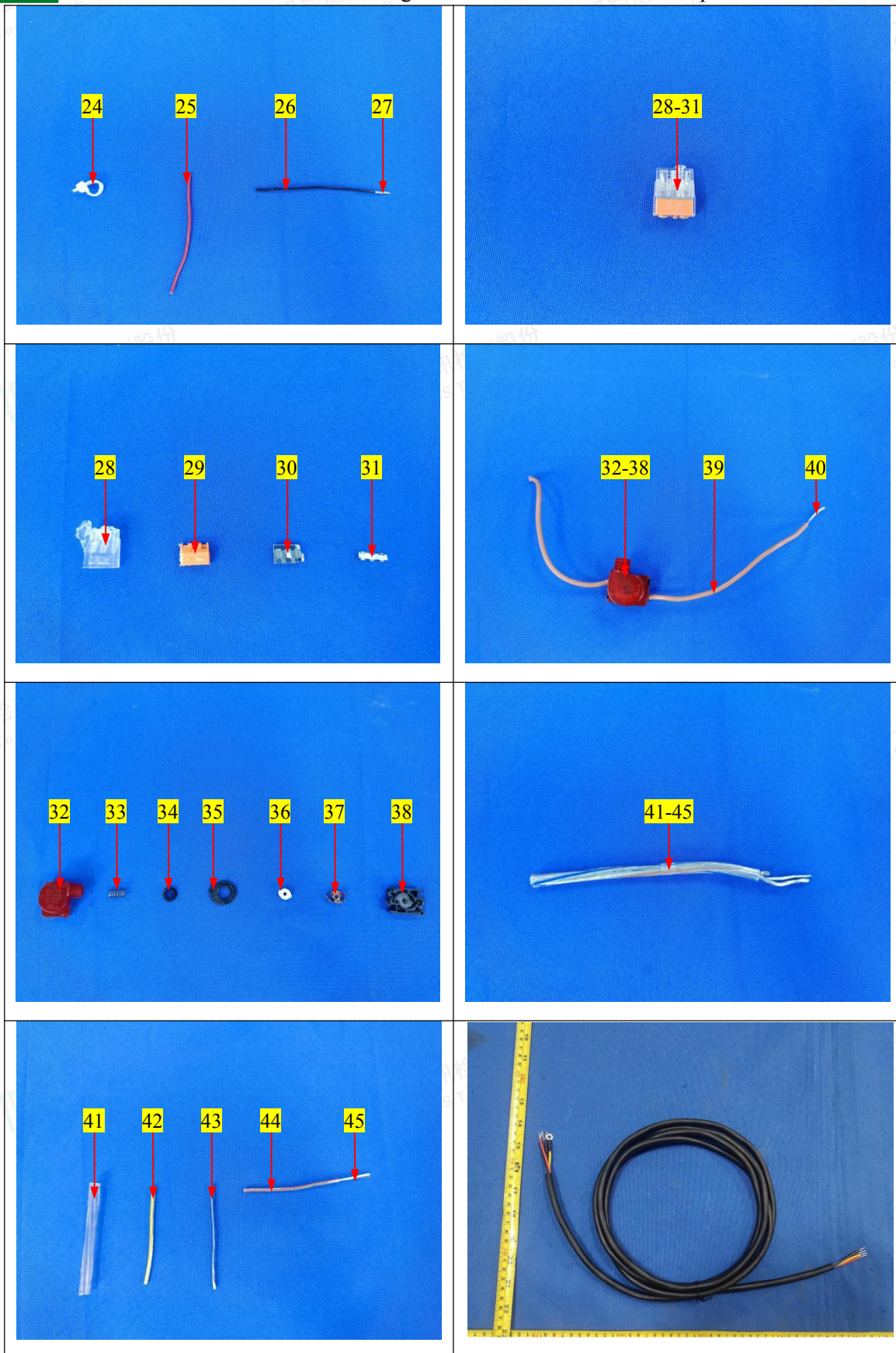


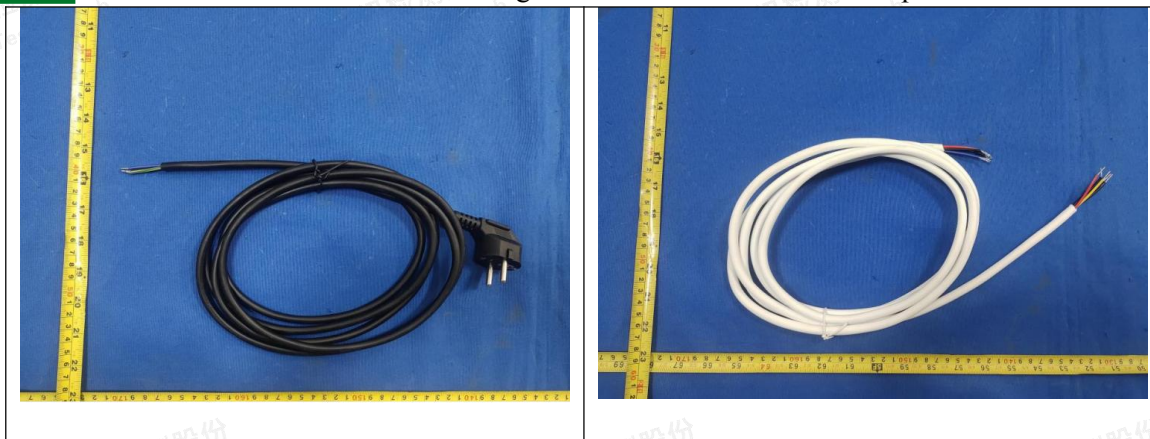


The photo(s) of the sample







**Statement:**

1. The test report is invalid without the signature of the approver and the special seal for the company's report;
2. The company name, address and sample information shown on the report were provided by the applicant who should be responsible for the authenticity which are not verified by LCS;
3. The test results in this report are only responsible for the tested samples;
4. Without written approval of LCS, this report can't be reproduced except in full;
5. In case of any discrepancy between the corresponding Chinese and English contents in the test report, the English version shall prevail.

*** End of Report ***

