TEST REPORT

Applicant Name:	JKBMS Electronic Technology Co., Ltd
Address:	1204, Block A, Building 3, Yunzhi Science Park, Guangming District, Shenzhen City CHINA
Manufacturer Name:	JKBMS Electronic Technology Co., Ltd
Address:	1204, Block A, Building 3, Yunzhi Science Park, Guangming District, Shenzhen City CHINA
Sample Description:	BATTERY MANAGEMENT SYSTEM
Main Model(s):	BDC8S200A
Additional Model(s):	BDC8S50A, BDC8S100A, BDC8S150A, BDC8S300A, BDC16S50A, BDC16S100A, BDC16S150A, BDC16S200A, BDC16S300A, BDC24S50A, BDC24S100A, BDC24S150A, BDC24S200A, BDC24S300A, BDC32S100A, BDC32S150A, BDC32S200A, BIU-E2-12, BIU-E2-24, BIU-E2-36, BIU-E2-48, BAU-A3, BCU-B3, BCU-B3H, BMU-H4-12, BMU-H5-16, BMU-H4-24, BMU-H5-48, BMU-H5-52, BMU-H5-104, EMS-E2, EMS-E3
Trade Mark:	JKESS
Sample Received Date:	Jan. 09, 2025
Test Period:	Jan. 09, 2025 to Jan. 16, 2025
Test Method(s):	Please refer to next page(s)
Test Result(s):	Please refer to next page(s)

Result Summary:

Test Requested By Applicant:	**Conclusion**
(1) EU RoHS Directive (EU)2015/863 amending Annex II to Directive 2011/65/EU	
—Lead, Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) Content	PASS
—Bis(2-ethylhexyl)-phthalate (DEHP), Benzyl butyl phthalate (BBP), Dibutyl phthalate (DBP), Diisobutyl phthalate (DIBP) Content	PASS

Testing procedure and testing location:

Testing Laboratory.....:	**Guangdong Zhonghan Testing Technology Co., Ltd.**
Address.....:	Room 104/201, Building 1, Yibaolai Industrial Park, Qiaotou, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Date Of Testing.....:	Jan. 09, 2025 to Jan. 16, 2025
Approved By (Name + Signature).....:	Eric Lu

1. Revision History：

Report No.	Issue Date	Description	Approved
ZHT-250109111C01	Jan. 16, 2025	Original	Valid
Note: Once the revision has been made, then previous versions reports are invalid.			

2. Test Method(s):

Test item(s)	Test Method(s)	Equipment(s)
Screening Analysis By XRF		
Lead (Pb)	IEC 62321-3-1:2013	ED-XRF
Cadmium (Cd)		
Mercury (Hg)		
Chromium (Cr)		
Bromine (Br)		
Chemical Testing		
Mercury (Hg)	IEC 62321-4:2013+A1:2017	ICP-OES
Lead (Pb)	IEC 62321-5:2013	ICP-OES
Cadmium (Cd)	IEC 62321-5:2013	ICP-OES
PBB	IEC 62321-6:2015	GC-MS
PBDE		
Chromium(Cr VI) for colourless and coloured corrosion-protected coatings on metals	IEC 62321-7-1:2015	UV-Vis
Chromium(Cr VI) for polymers and electronics	IEC 62321-7-2:2017	UV-Vis
DEHP	IEC 62321-8:2017	GC-MS
DBP		
BBP		
DIBP		

3. Test Result(s):

3.1 Lead, Mercury, Cadmium, Chromium(Cr VI), PBB and PBDE content

Part No.	Sample Description	Conclusion Of ED-XRF						Result of Wet Chemical Testing(mg/kg)
		Pb	Cd	Hg	Cr(VI)▼	PBB	PBDE	
1	White plastic skin	BL	BL	BL	BL	BL	BL	N.A.
2	White plastic	BL	BL	BL	BL	BL	BL	N.A.
3	Black plastic wire jacket	BL	BL	BL	BL	BL	BL	N.A.
4	Silvery metal	BL	BL	BL	BL	N.A.	N.A.	N.A.
5	Black rubber	BL	BL	BL	BL	BL	BL	N.A.
6	Blue plastic	BL	BL	BL	BL	BL	BL	N.A.
7	White plastic	BL	BL	BL	BL	BL	BL	N.A.
8	Red plastic wire jacket	BL	BL	BL	BL	BL	BL	N.A.
9	Black plastic wire jacket	BL	BL	BL	BL	BL	BL	N.A.
10	White plastic	BL	BL	BL	BL	BL	BL	N.A.
11	White plastic skin	BL	BL	BL	BL	BL	BL	N.A.
12	Silvery metal	BL	BL	BL	BL	N.A.	N.A.	N.A.
13	Purple glue	BL	BL	BL	BL	BL	BL	N.A.
14	Silvery metal	BL	BL	BL	BL	N.A.	N.A.	N.A.
15	Black clad metal	BL	BL	BL	BL	N.A.	N.A.	N.A.
16	Black cladding metal screw	BL	BL	BL	BL	N.A.	N.A.	N.A.
17	Silvery metal PIN	BL	BL	BL	BL	N.A.	N.A.	N.A.

Part No.	Sample Description	Conclusion Of ED-XRF						Result of Wet Chemical Testing(mg/kg)
		Pb	Cd	Hg	Cr(VI)▼	PBB	PBDE	
18	White plastic	BL	BL	BL	BL	BL	BL	N.A.
19	Beige plastic	BL	BL	BL	BL	BL	BL	N.A.
20	Silvery metal PIN	BL	BL	BL	BL	N.A.	N.A.	N.A.
21	Silvery metal	BL	BL	BL	BL	N.A.	N.A.	N.A.
22	Black clad metal	BL	BL	BL	BL	N.A.	N.A.	N.A.
23	Copper-colored cladding metal	BL	BL	BL	BL	N.A.	N.A.	N.A.
24	Green cladding PCB board	BL	BL	BL	BL	BL	BL	N.A.
25	Soldering tin	BL	BL	BL	BL	N.A.	N.A.	N.A.
26	Silvery metal	BL	BL	BL	BL	N.A.	N.A.	N.A.
27	Black plastic	BL	BL	BL	BL	BL	BL	N.A.
28	Purple glue	BL	BL	BL	BL	BL	BL	N.A.
29	Black plastic wire jacket	BL	BL	BL	BL	BL	BL	N.A.
30	Copper colored metal wire	BL	BL	BL	BL	N.A.	N.A.	N.A.
31	Coppery metal coil (Loop inductance)	BL	BL	BL	BL	N.A.	N.A.	N.A.
32	Red cladding metal coil (Loop inductance)	BL	BL	BL	BL	N.A.	N.A.	N.A.
33	Grey solid core w/green coating (Loop inductance)	BL	BL	BL	BL	BL	BL	N.A.
34	Yellow plastic cable jacket (Loop inductance)	BL	BL	BL	BL	BL	BL	N.A.
35	Coppery metal coil (Inductance)	BL	BL	BL	BL	N.A.	N.A.	N.A.

Part No.	Sample Description	Conclusion Of ED-XRF						Result of Wet Chemical Testing(mg/kg)
		Pb	Cd	Hg	Cr(VI)▼	PBB	PBDE	
36	Gray solid material (Inductance)	BL	BL	BL	BL	BL	BL	N.A.
37	Glue	BL	BL	BL	BL	BL	BL	N.A.
38	Silvery metal	BL	BL	BL	BL	N.A.	N.A.	N.A.
39	Yellow plastic tape (Transformer)	BL	BL	BL	BL	BL	BL	N.A.
40	Gray Insulation material (Transformer)	BL	BL	BL	BL	BL	BL	N.A.
41	Black Insulation material (Transformer)	BL	BL	BL	BL	BL	BL	N.A.
42	Coppery metal coil (Transformer)	BL	BL	BL	BL	N.A.	N.A.	N.A.
43	Transparent plastic cable jacket (Transformer)	BL	BL	BL	BL	BL	BL	N.A.
44	Silvery metal PIN (Transformer)	BL	BL	BL	BL	N.A.	N.A.	N.A.
45	Silvery aluminum metal body (Capacitor)	BL	BL	BL	BL	N.A.	N.A.	N.A.
46	Silvery metal PIN (Capacitor)	BL	BL	BL	BL	N.A.	N.A.	N.A.
47	Silvery metal PIN	BL	BL	BL	BL	N.A.	N.A.	N.A.
48	Black plastic	BL	BL	BL	BL	BL	BL	N.A.
49	Black IC SMD	BL	BL	BL	BL	BL	BL	N.A.
50	Silvery metal PIN	BL	BL	BL	BL	N.A.	N.A.	N.A.

Notes：

(1) Interpretation of screening results by X-ray fluorescence spectrometry (XRF):

(a) Table A.2 of IEC 62321-3-1:2013 gives an example of a scheme for interpreting results at sample limits and given safety factors. Table A.2- Screening limits in mg/kg for regulated elements in various matrices.

Element	Polymers	Metals	Composite Material
Cd	BL≤(70-3σ)<IN<(130+3σ)≤OL	BL≤(70-3σ)<IN<(130+3σ)≤OL	LOD<IN<(150+3σ)≤OL
Pb	BL≤(700-3σ)<IN<(1300+3σ)≤OL	BL≤(700-3σ)<IN<(1300+3σ)≤OL	BL≤(500-3σ)<IN<(1500+3σ)≤OL
Hg	BL≤(700-3σ)<IN<(1300+3σ)≤OL	BL≤(700-3σ)<IN<(1300+3σ)≤OL	BL≤(500-3σ)<IN<(1500+3σ)≤OL
Br	BL≤(300-3σ)<IN	Not applicable	BL≤(250-3σ)<IN
Cr	BL≤(700-3σ)<IN	BL≤(700-3σ)<IN	BL≤(500-3σ)<IN

(b) For regulated substances[polybrominated biphenyls (PBBs), polybrominated diphenyl ethers (PBDEs)], the results showed the total Br content, while for regulated substance Cr(Ⅵ), the results showed the total Cr content. If the quantitative results for the elements Br and/or Cr are higher than the limit (for Br calculated based on the stoichiometry of Br in the most common congeners of PBB/PBDE), the sample is "inconclusive".

(c) Results are obtained by ED-XRF for primary screening, LOD = Limit of Detection, BL = Below Limit, OL= Over Limit, IN (The symbol X marks the region)=Inconclusive, where further investigation is necessary, and further chemical testing by ICP-OES (for Cd, Pb, Hg), UV-Vis (for Cr(VI)) and GC-MS (for PBB/PBDE) are recommended to be performed.

(d) The ED-XRF screening test for elements-The reading Nov be different to the actual content in the sample be of non-uniformity composition.

(2) Interpretation of results by chemical tests.

(a) mg/kg = ppm = milligram per kilogram = 0.0001%, N.D. = No Detection(<MDL), N.A. = Not Applicable.

(b) Unit and Method Detection Limit(MDL) in wet chemical testing.

Test Item(s)	Pb	Cd	Hg	Cr(VI)		PBB	PBDE
Units	mg/kg	mg/kg	mg/kg	mg/kg	μg/cm^2	mg/kg	mg/kg
MDL	2	2	2	10	0.10	5	5

The MDL for single compound of PBBs and PBDEs is 5mg/kg.

The MDL of Cr(Ⅵ) for polymers and electronics sample is 10mg/kg.

The MDL of Cr(Ⅵ) for colourless and coloured corrosion-protected coatings on metal sample is 0.10μg/cm^2.

(c) ▼ = Metal sample

According to IEC 62321-7-1:2015, determined of Cr(Ⅵ) on metal sample by boiling water extraction test method, and result is shown as Positive/Negative.

Boiling water extraction：

Negative = Absence of Cr(Ⅵ) coating, the detected concentration in boiling water extraction solution is less than 0.10μg/cm^2.

Positive = Presence of Cr(Ⅵ) coating, the detected concentration in boiling water extraction solution is greater than 0.13μg/cm^2.

Information on storage conditions and production date of the tested sample is unavailable and thus Cr(Ⅵ) results represent status of the sample at the time of testing.

(3) Requirement as per EU RoHS Directive 2011/65/EU.

Test Item(s)	Limits Requirement
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr(VI))	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1%(1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)

(4) As specified by client, only test the designated sample.

3.2 Phthalates（DEHP, BBP, DBP, DIBP）content

Part No.	Result of Chemical Testing(mg/kg)			
	DIBP	DBP	BBP	DEHP
1	N.D.	N.D.	N.D.	N.D.
2	N.D.	N.D.	N.D.	N.D.
3	N.D.	N.D.	N.D.	N.D.
5	N.D.	N.D.	N.D.	N.D.
6	N.D.	N.D.	N.D.	N.D.
7	N.D.	N.D.	N.D.	N.D.
8	N.D.	N.D.	N.D.	N.D.
9	N.D.	N.D.	N.D.	N.D.
10	N.D.	N.D.	N.D.	N.D.
11	N.D.	N.D.	N.D.	N.D.
13	N.D.	N.D.	N.D.	N.D.
18	N.D.	N.D.	N.D.	N.D.
19	N.D.	N.D.	N.D.	N.D.
24	N.D.	N.D.	N.D.	N.D.
27	N.D.	N.D.	N.D.	N.D.
28	N.D.	N.D.	N.D.	N.D.
29	N.D.	N.D.	N.D.	N.D.
33	N.D.	N.D.	N.D.	N.D.
34	N.D.	N.D.	N.D.	N.D.
36	N.D.	N.D.	N.D.	N.D.
37	N.D.	N.D.	N.D.	N.D.
39	N.D.	N.D.	N.D.	N.D.
40	N.D.	N.D.	N.D.	N.D.
41	N.D.	N.D.	N.D.	N.D.
43	N.D.	N.D.	N.D.	N.D.
48	N.D.	N.D.	N.D.	N.D.
49	N.D.	N.D.	N.D.	N.D.

Notes:

(1) mg/kg = ppm = milligram per kilogram = 0.0001%.

(2) N.D. = No Detection(<MDL).

(3) N.A. = Not Applicable.

(4) Requirement as per EU RoHS amendment Directive EU 2015/863.Unit and Method Detection Limit(MDL) in chemical testing.

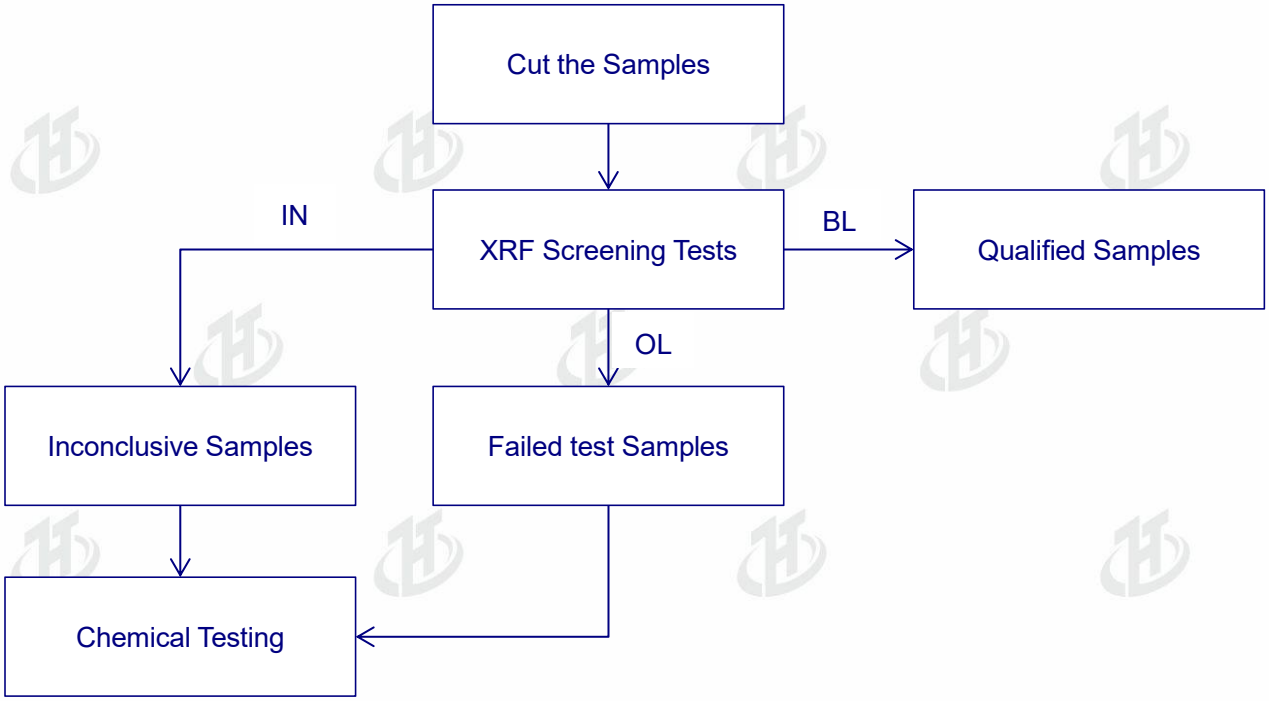
Test Item(s)	DIBP	DBP	BBP	DEHP
Cas No.	84-69-5	84-74-2	85-68-7	117-81-7
Units	mg/kg			
MDL	50	50	50	50
Limits Requirement	1000	1000	1000	1000

(5) Abbreviation: "DBP" denotes Dibutyl phthalate (DBP), "BBP" denotes Benzyl butyl phthalate (BBP), "DEHP" denotes Bis(2-ethylhexyl)-phthalate (DEHP), "DIBP" denotes Diisobutyl phthalate (DIBP).

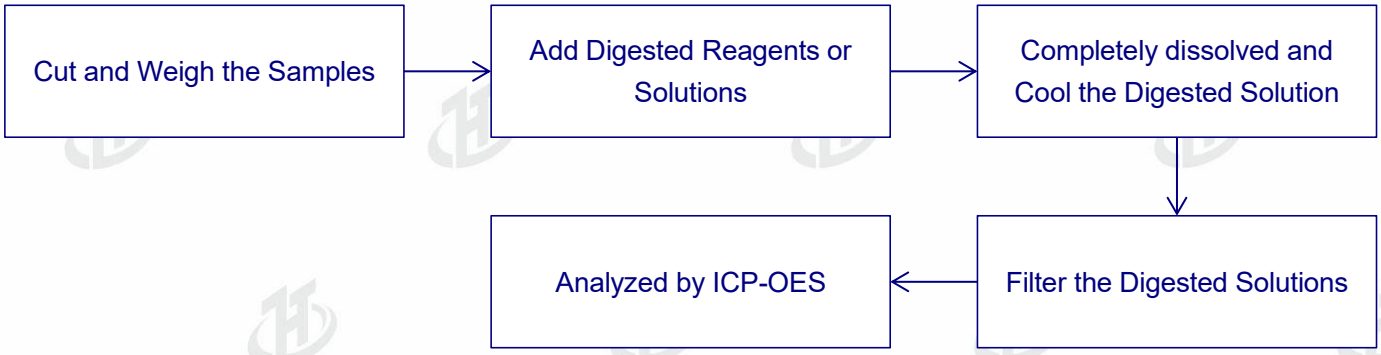
(6) As specified by client, only test the designated sample.

Attachment A : Measurement Flow chart

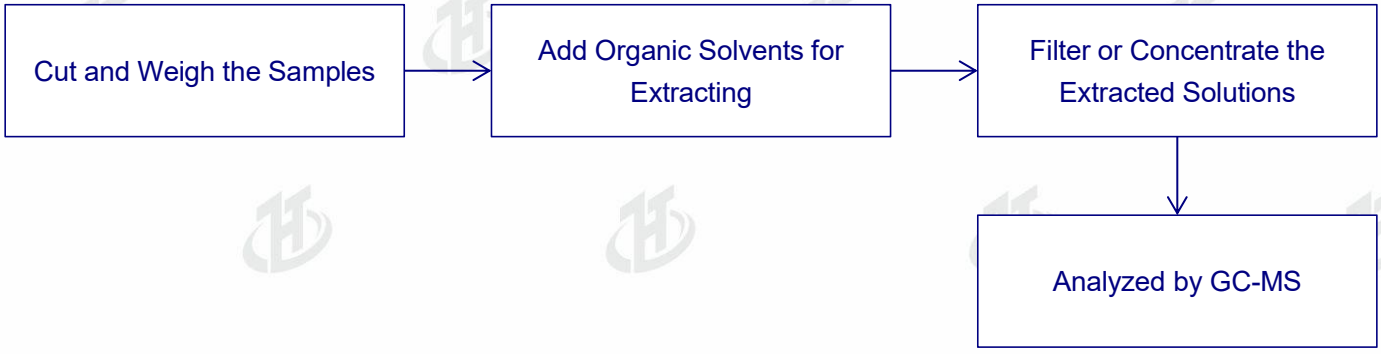
1. ED-XRF Scan



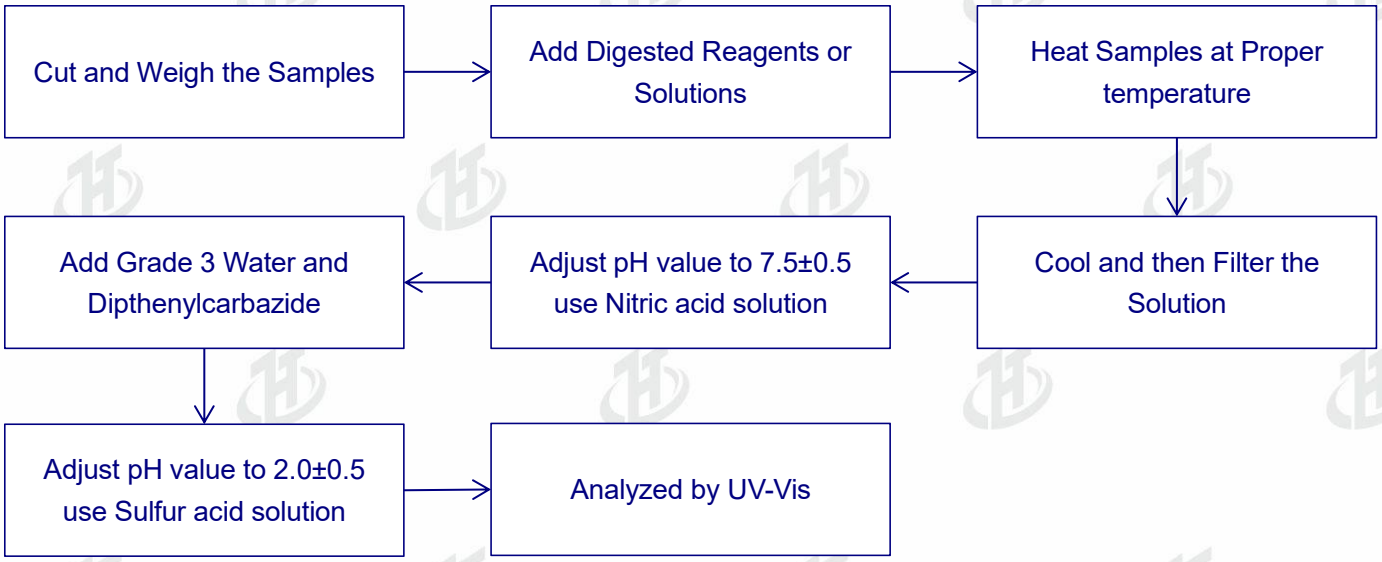
2. Lead, Cadmium, Mercury



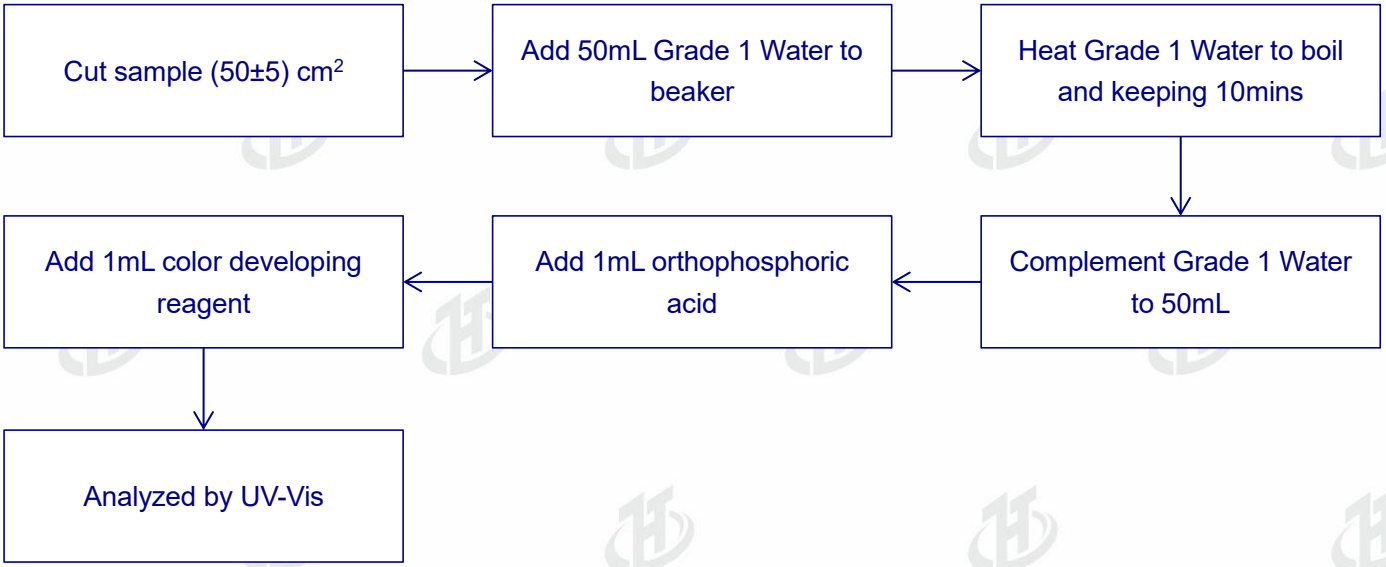
3. PBBs & PBDEs, Phthalates



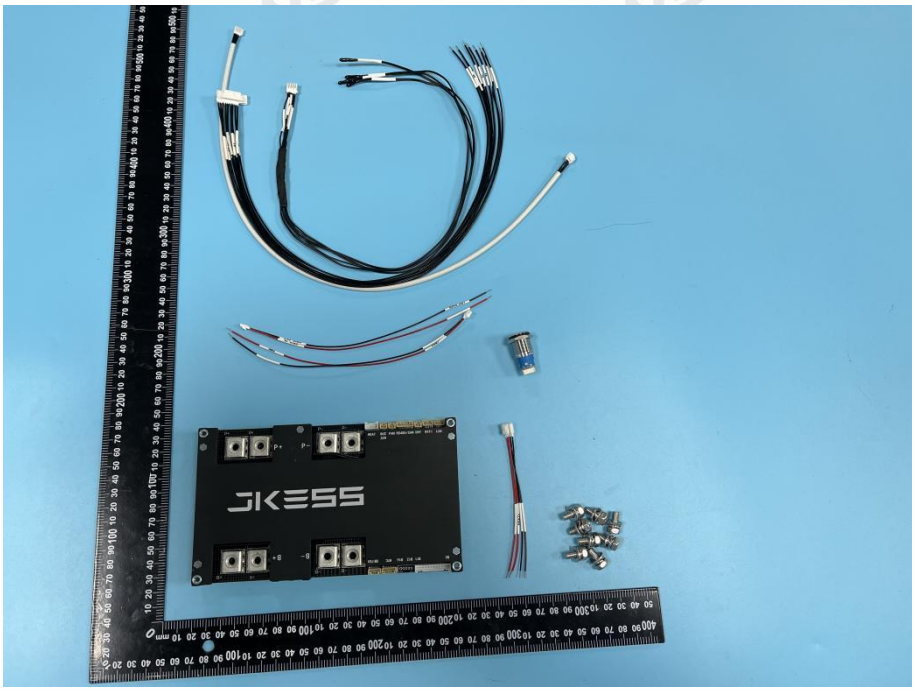
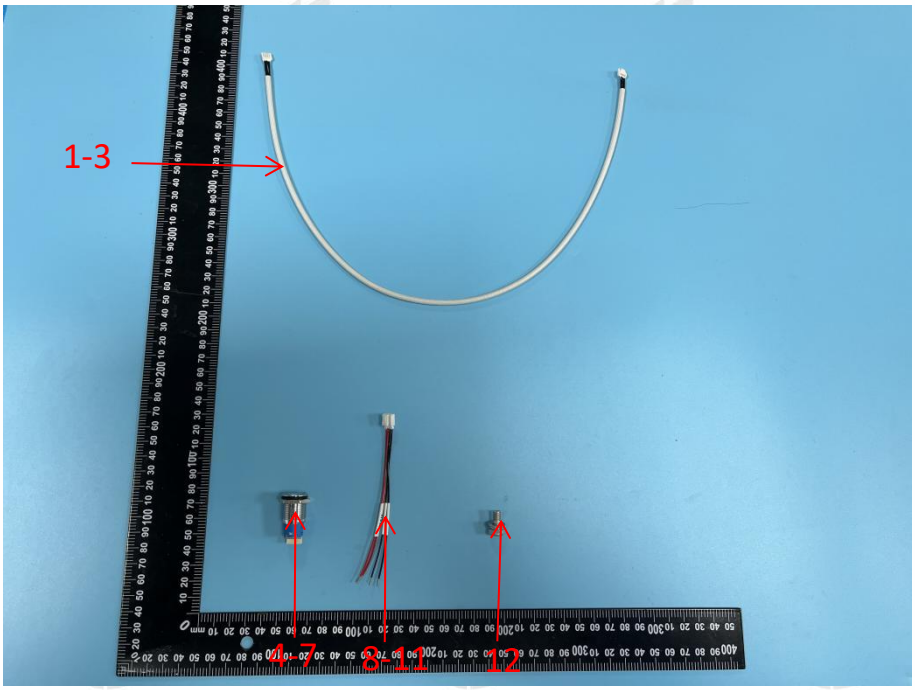
4. Chromium(Cr VI) (Non-metal)

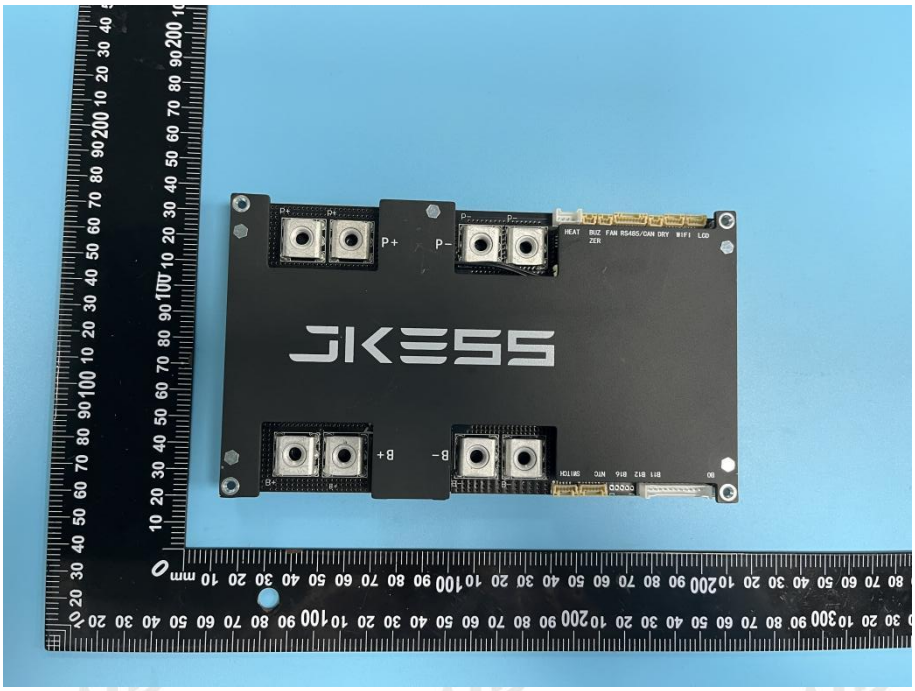
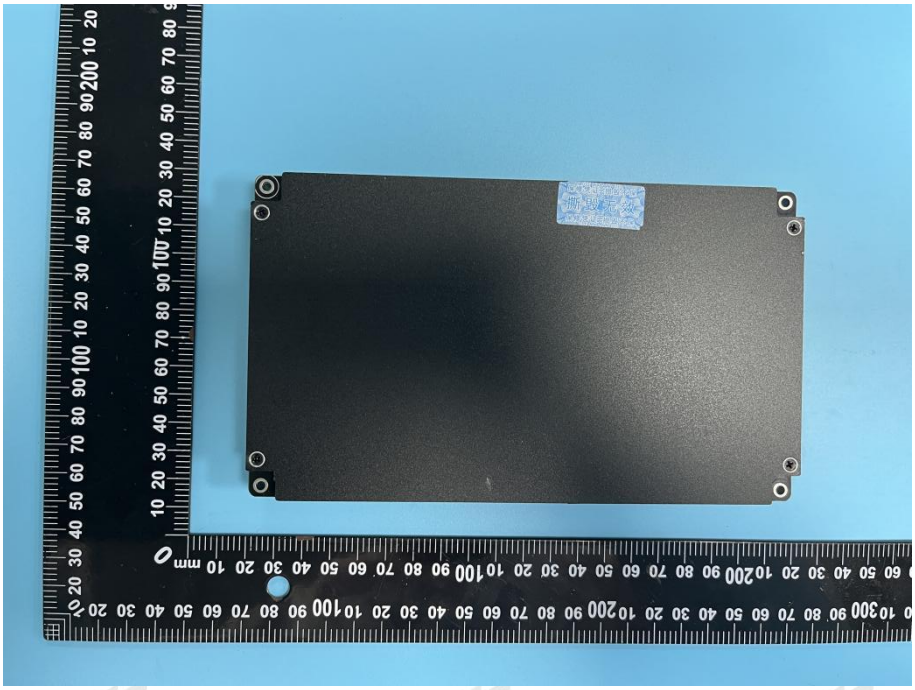


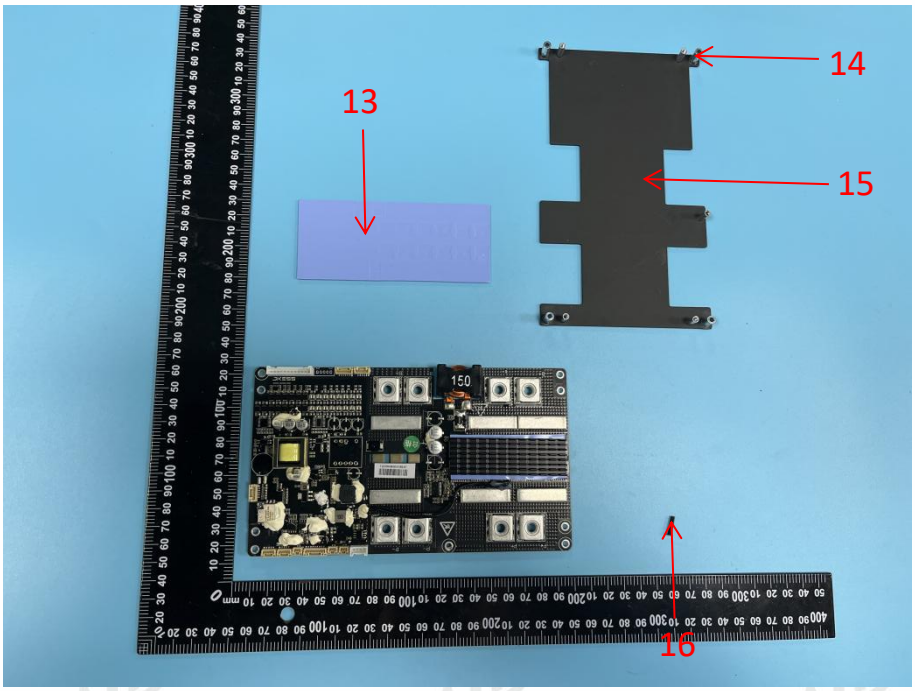
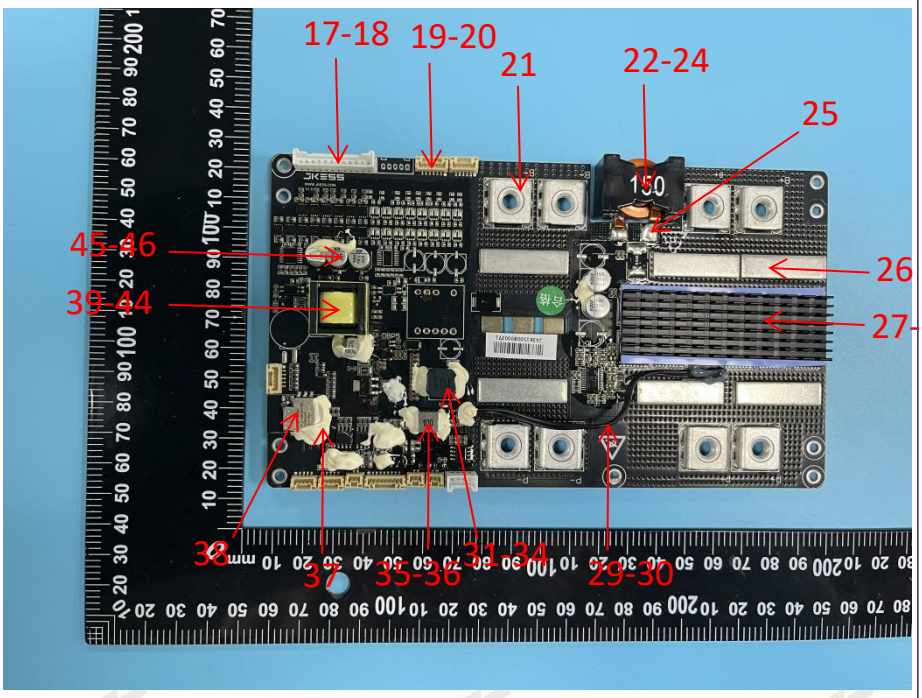
5. Chromium(Cr VI) (Metal)

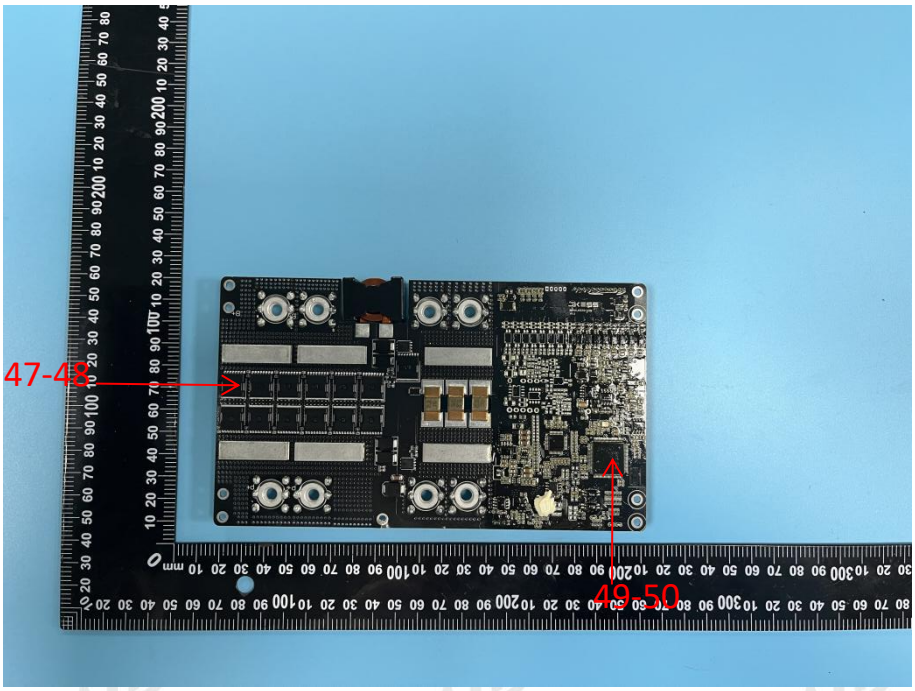


Attachment B : Sample Photo

1.	
2.	

3.	
4.	

5.	13 14 15 16
6.	17-18 19-20 21 22-24 25 26 27-28 45-46 39-44 38 37 35-36 31-34 29-30

7.	

====== End of Test Report =====

Statement

1. The information as listed on the first page of this test report was all provided by the client except the received date, testing period, test result(s) and test request. The client shall be responsible for the representativeness of sample and authenticity of materials, for which Guangdong Zhonghan Testing Technology Co., Ltd. shall bear no responsibilities.

2. Unless otherwise stated the results shown in this report refer only the Main Model(s) sample(s) tested and does not bear other joint and several liabilities.

3. The test report is invalid without the signature of the approving person and the “special seal for inspection and testing”. This report shall not be altered, increased or deleted.

4. Without written approval of Guangdong Zhonghan Testing Technology Co., Ltd., this report shall not be reproduced in part or published as advertisement.and the dupicate report shall be invalid if the special seal for inspection and testing is not re-affixed.

5. Objection should be issued in 15 days upon receiving the report, overdue opinion is inadmissible.

6. If the report is not stamped with the qualification identification mark, it is only used for scientific research, teaching, internal quality control , the client internal using and other activities, and cannot be used as the purpose of providing the society with data with certification function.

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