

TEST REPORT

Applicant: Flashbay Electronics
Address: Building2 ,Jixun Industrial Park ,Xinjiao ,Dong'ao Village ,Shatian Town ,Huiyang District ,Huizhou City , Guangdong Province,P.R.China

The following sample(s) was/were submitted and identified on behalf of the client as:

Sample name: USB Hub
Model: Expand/XN
Manufacturer & Factory: Flashbay Electronics
Address: Building2 ,Jixun Industrial Park ,Xinjiao ,Dong'ao Village ,Shatian Town ,Huiyang District ,Huizhou City , Guangdong Province,P.R.China

Sample No.: S241022030001
Sample Received Date: 2024-10-24
Testing Period: 2024-10-24~ 2024-12-04

Test Requirement:

As specified by client, to determine the Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium (Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs), Bis-(2-ethylhexyl) Phthalate (DEHP), Benzyl butyl Phthalate (BBP), Dibutyl Phthalate (DBP) and Diisobutyl Phthalate(DIBP)contents in the submitted sample(s) in accordance with RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

Conclusion

Pass

Test Result(s): Please refer to the following page(s);

Test Method: Please refer to the following page(s);

Compiled by: Nina Car Reviewed by: Luetta Mo

Approved by: May Li Date: 2024-12-05

Sample Description:

No.	Sample name	Description
1	shell	Black coating
2		Silver metal shell
3		White encapsulation
4		Gray plastic
5	PCBA	Green PCB
6		Tin solder
7		Silver metal shell
8		Blue plastic
9		Metal plug pin
10		Silver metal shell
11		Beige plastic
12		Metal plug pin
13		SMD chip
14		SMD crystal
15	SMD capacitor	
16	Type-C interface	Silver metal
17		White encapsulation
18		Silver metal shell
19		Black plastic
20		Metal plug pin
21		Green PCB
22		Tin solder of PCB
23		SMD resistor of SMD
24	SMD capacitor of SMD	
25	Wiring harness	White background with black text label of label
26		White exterior wire jacket of wire
27		Silver metal foil of wire
28		Black wire jacket
29		Red wire jacket
30		White inner wire jacket
31		Purple wire jacket
32		Green wire jacket
33		Orange wire jacket
34		Yellow wire jacket
35		Blue wire jacket
36		Gray plastic wire jacket
37		Core of wire

Test Result(s):
Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium (Cr(VI)), Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers(PBDEs)

Part No.	Test Items	XRF Screening Result(mg/kg)	Chemical Test Result(mg/kg)	Conclusion	
1	Pb	BL	/	Pass	
	Cd	BL	/		
	Hg	BL	/		
	Cr	Cr(VI)	BL		/
	Br	PBBs	BL		/
		PBDEs			/
2	Pb	BL	/	Pass	
	Cd	BL	/		
	Hg	BL	/		
	Cr	Cr(VI)	BL		/
	Br	PBBs	/		/
		PBDEs			/
3	Pb	BL	/	Pass	
	Cd	BL	/		
	Hg	BL	/		
	Cr	Cr(VI)	BL		/
	Br	PBBs	BL		/
		PBDEs			/
4	Pb	BL	/	Pass	
	Cd	BL	/		
	Hg	BL	/		
	Cr	Cr(VI)	BL		/
	Br	PBBs	BL		/
		PBDEs			/
5	Pb	BL	/	Pass	
	Cd	BL	/		
	Hg	BL	/		
	Cr	Cr(VI)	BL		/
	Br	PBBs	IN		N.D.
		PBDEs			N.D.
6	Pb	BL	/	Pass	
	Cd	BL	/		
	Hg	BL	/		
	Cr	Cr(VI)	BL		/
	Br	PBBs	/		/
		PBDEs			/

7	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	/	/	
		PBDEs		/	
8	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
		PBDEs		/	
9	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	/	/	
		PBDEs		/	
10	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	/	/	
		PBDEs		/	
11	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
		PBDEs		/	
12	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	/	/	
		PBDEs		/	
13	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
		PBDEs		/	

14	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
		PBDEs		/	
15	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
		PBDEs		/	
16	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	/	/	
		PBDEs	/	/	
17	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
		PBDEs		/	
18	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	IN	N.D.	
	Br	PBBs	/	/	
		PBDEs		/	
19	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
		PBDEs		/	
20	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	/	/	
		PBDEs		/	

21	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
		PBDEs		/	
22	Pb		OL	143	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	/	/	
		PBDEs		/	
23	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
		PBDEs		/	
24	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
		PBDEs		/	
25	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
		PBDEs		/	
26	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
		PBDEs		/	
27	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	/	/	
		PBDEs		/	

28	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
PBDEs		/			
29	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
PBDEs		/			
30	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
PBDEs		/			
31	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
PBDEs		/			
32	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
PBDEs		/			
33	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
PBDEs		/			
34	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
PBDEs		/			

35	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
		PBDEs		/	
36	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	BL	/	
		PBDEs		/	
37	Pb		BL	/	Pass
	Cd		BL	/	
	Hg		BL	/	
	Cr	Cr(VI)	BL	/	
	Br	PBBs	/	/	
		PBDEs		/	

Bis-(2-ethylhexyl) Phthalate (DEHP), Benzyl butyl Phthalate (BBP), Dibutyl Phthalate (DBP) and Diisobutyl Phthalate(DIBP)

Test Items	Result(mg/kg)			
	1	3+17	4+8+11+19	5+21
Bis-(2-ethylhexyl) Phthalate (DEHP)	N.D.	N.D.	N.D.	N.D.
Benzyl butyl Phthalate (BBP)	N.D.	N.D.	N.D.	N.D.
Dibutyl Phthalate (DBP)	N.D.	N.D.	N.D.	N.D.
Diisobutyl Phthalate(DIBP)	N.D.	N.D.	N.D.	N.D.
Conclusion	Pass	Pass	Pass	Pass

Test Items	Result(mg/kg)			
	25	26+28+29+30	31+32+33+34	35+36
Bis-(2-ethylhexyl) Phthalate (DEHP)	N.D.	N.D.	N.D.	N.D.
Benzyl butyl Phthalate (BBP)	N.D.	N.D.	N.D.	N.D.
Dibutyl Phthalate (DBP)	N.D.	N.D.	N.D.	N.D.
Diisobutyl Phthalate(DIBP)	N.D.	N.D.	N.D.	N.D.
Conclusion	Pass	Pass	Pass	Pass

- Note:
1. N.D. = Not Detected (<MDL)
MDL = Method Detection Limit
1 mg/kg = 1 ppm = 0.0001%
/=Not Regulated or Not Applicable
 2. BL = Below the XRF screening limit
IN = Further chemical test will be conducted when the screening result inconclusive
OL = Further chemical test will be conducted while the result is above the screening limit.
 3. For metal samples, the sample is negative for Cr(VI), if the Cr(VI) concentration is less than 0.10 µg/cm², the coating is considered a non- Cr(VI) based coating;
The sample is positive for Cr(VI), if the Cr(VI) concentration is greater than 0.13 µg/cm²,
The sample coating is considered to contain Cr(VI);
The result is considered to be inconclusive, the Cr(VI) concentration is between the 0.10 µg/cm² and 0.13 µg/cm², unavoidable coating variations may influence the determination.
Because the storage condition and production date of the sample are not known, the test results of the sample of hexavalent chromium can only represent the state of hexavalent chromium in the samples tested.
- Remark:
1. When conducting the test for PBBs&PBDEs, XRF was introduced to screen Br Exclusively; When conducting the test for Hexavalent Chromium, XRF was introduced to screen Chromium exclusively.

Test Method:

1. With reference to IEC 62321-1: 2013 Ed.1.0, IEC 62321-2:2021 Ed.2.0, IEC 62321-3-1:2013 Ed.1.0. XRF screening limits in mg/kg for regulated elements in various matrices.

Element	Limit of IEC 62321-3-1:2013 Ed.1.0 (mg/kg)		
	Polymers	Metals	Composite material
Pb	$BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X$ $< (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X$ $< (1500+3\sigma) \leq OL$
Cd	$BL \leq (70-3\sigma) < X <$ $(130+3\sigma) \leq OL$	$BL \leq (70-3\sigma) < X <$ $(130+3\sigma) \leq OL$	$LOD < X < (150+3\sigma)$ $\leq OL$
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	$BL \leq (300-3\sigma) < X$	/	$BL \leq (250-3\sigma) < X$

Note: BL= Below the XRF screening limit
 OL=Over the XRF screening limit
 X=The symbol "X" marks the region where further investigation is necessary.
 3σ =The reproducibility of analytical instruments
 LOD= Detection limit

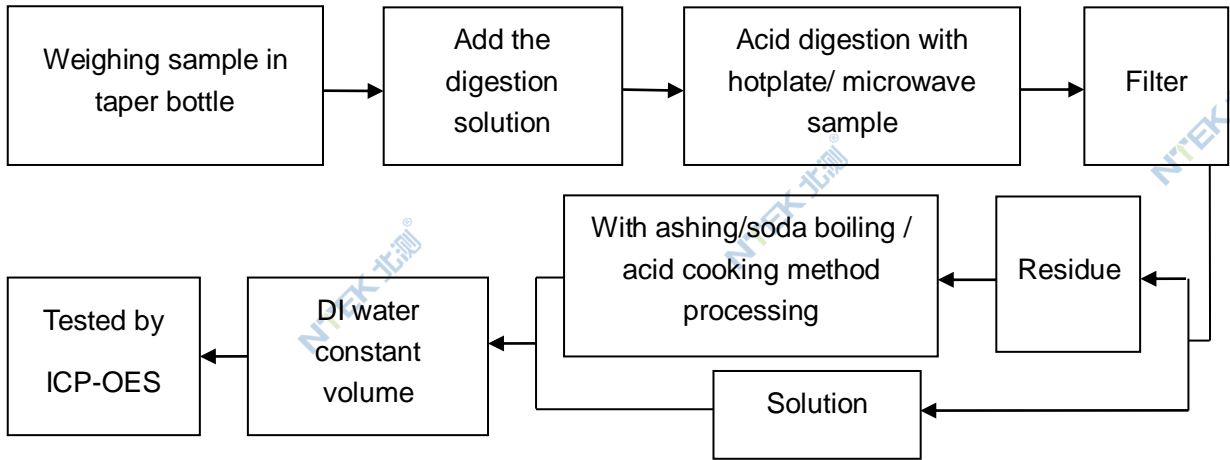
2. Chemical Test

Test item	Test method	Test instrument	MDL	Limit [△]
Lead (Pb)	IEC 62321-5:2013 Ed.1.0	ICP-OES	2 mg/kg	1000 mg/kg
Cadmium (Cd)	IEC 62321-5:2013 Ed.1.0	ICP-OES	2 mg/kg	100 mg/kg
Mercury (Hg)	IEC 62321-4:2013+AMD1:2017	ICP-OES	2 mg/kg	1000 mg/kg
Hexavalent Chromium(Cr(VI))	IEC 62321-7-1:2015 Ed.1.0	UV-Vis	0.10 µg/cm ²	1000 mg/kg
	IEC 62321-7-2:2017 Ed.1.0		8 mg/kg	
Polybrominated Biphenyls(PBBs)	IEC 62321-6:2015 Ed.1.0	GC-MS	5 mg/kg	1000 mg/kg
Polybrominated, Diphenyl Ethers(PBDEs)	IEC 62321-6:2015 Ed.1.0	GC-MS	5 mg/kg	1000 mg/kg
Bis-(2-ethylhexyl) Phthalate (DEHP)	IEC 62321-8:2017 Ed.1.0	GC-MS	30 mg/kg	1000 mg/kg
Benzyl butyl Phthalate (BBP)	IEC 62321-8:2017 Ed.1.0	GC-MS	30 mg/kg	1000 mg/kg
Dibutyl Phthalate (DBP)	IEC 62321-8:2017 Ed.1.0	GC-MS	30 mg/kg	1000 mg/kg
Diisobutyl Phthalate (DIBP)	IEC 62321-8:2017 Ed.1.0	GC-MS	30 mg/kg	1000 mg/kg

[△]The limit is quoted from RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU.

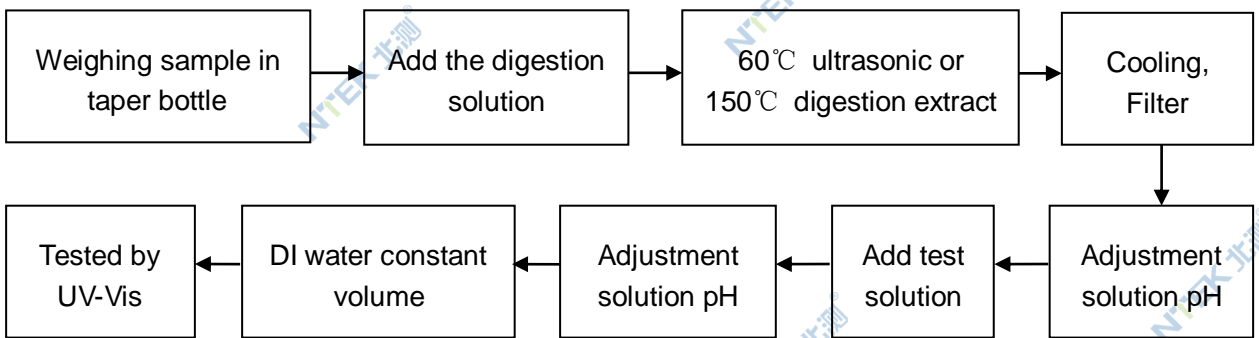
Test Flow:

1. Lead(Pb), Cadmium(Cd) , Mercury (Hg)

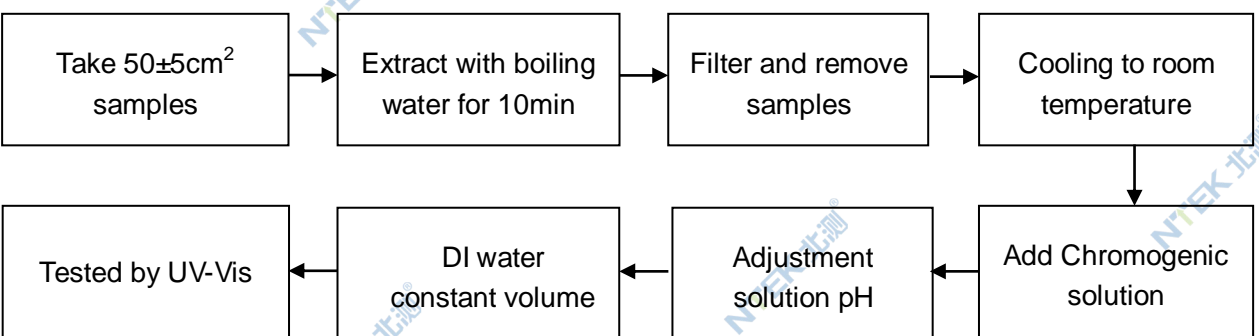


2. Hexavalent Chromium(Cr(VI))

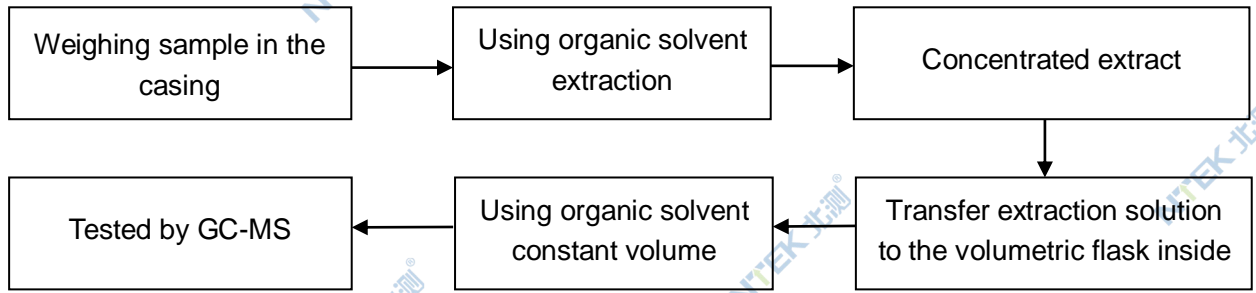
2.1 Non- metal sample(s)



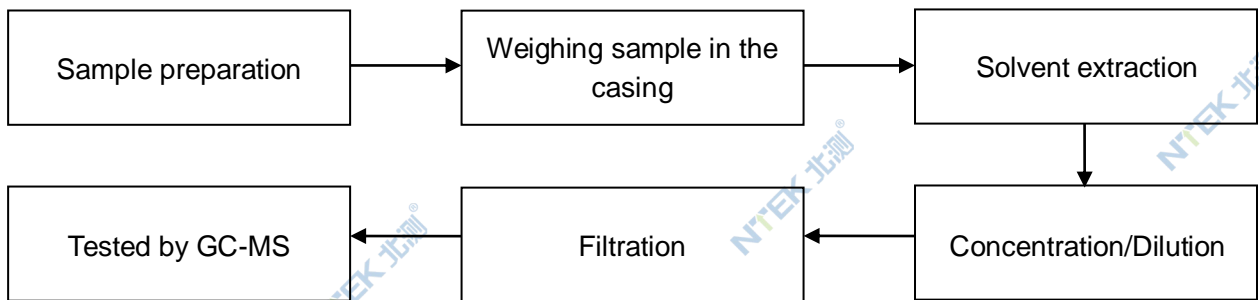
2.2 Metal sample(s)



3. PBBs/ PBDEs



4. Phthalates



Sample photo(s):

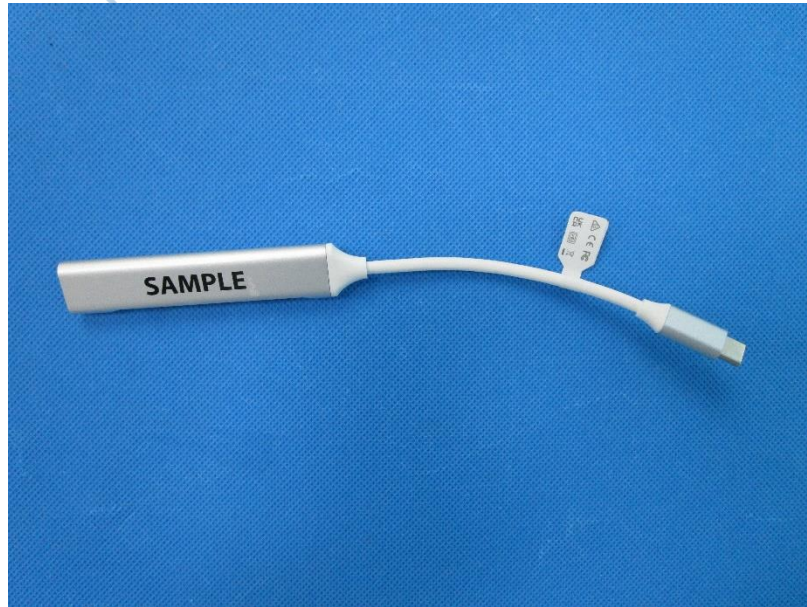


Fig.1 (Finished photo)

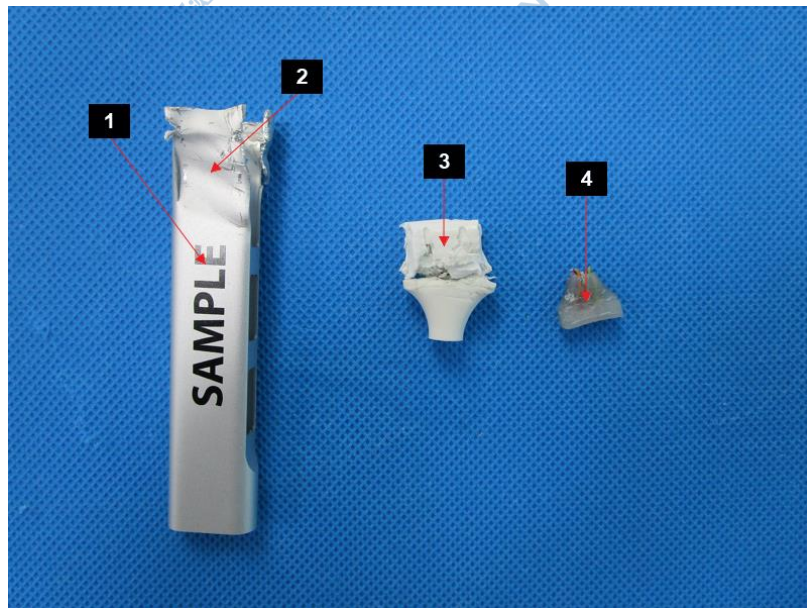


Fig.2

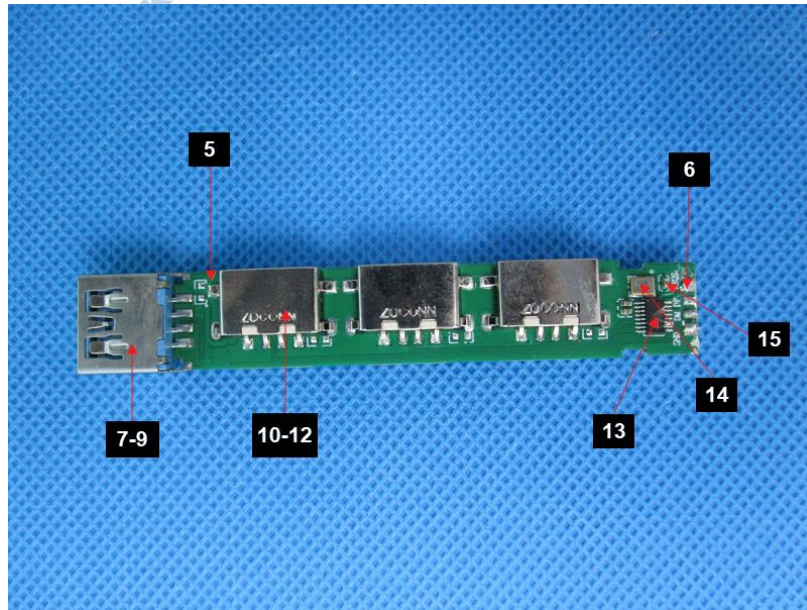


Fig.3

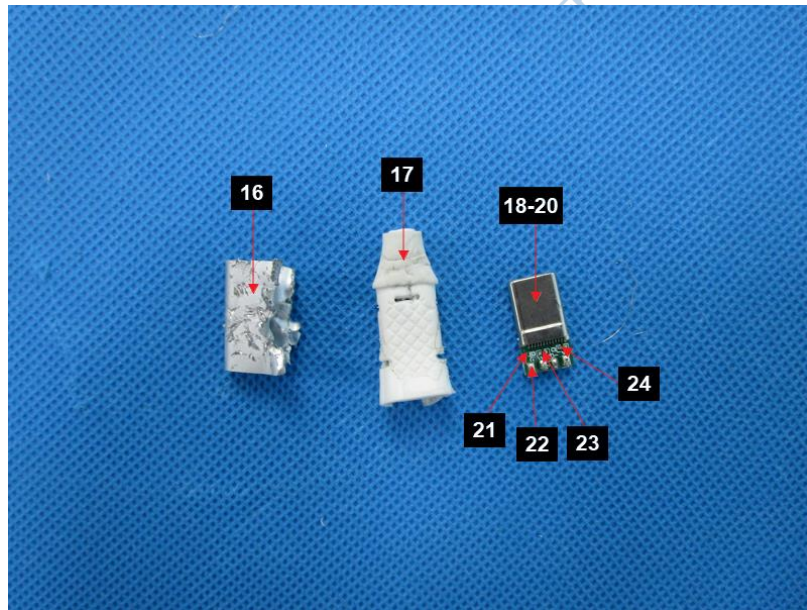


Fig.4

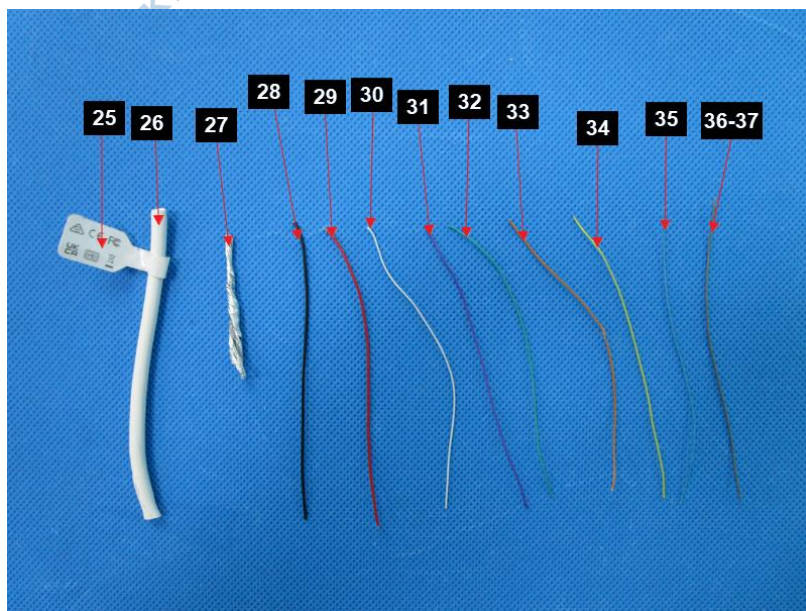


Fig.5

****End of Report****

The test results or data in this report will be used only for education, scientific research, enterprise product development and internal quality control or other purposes.

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