

# Test Report

No.SZR170309001001

Date: Mar. 15, 2017

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**Applicant** : Huizhou PinXu Industries Co., Ltd  
**Address** : PinXu Industry Zone, Baishi Village, Qiuchang Town, Huiyang District,  
Huizhou City, Guangdong Provinve, China  
**The submitted sample and sample information was/were submitted and identified by/on the behalf of the client**  
**Sample name** : wired standard keyboard  
**Type /model** : 501/502/301/302/401C/702  
**Sample received date** : Mar. 09, 2017  
**Testing period** : Mar. 09, 2017 to Mar. 15, 2017

**Test requested** : 1. As specified by client, to screen Lead(Pb), Cadmium(Cd), Mercury(Hg), Chromium(Cr) and Bromine(Br) in the submitted sample(s) by XRF.  
2. As specified by client, when screening results exceed the XRF screening limit in IEC 62321-3-1:2013, further use of chemical methods are required to test the Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyls(PBBs), Polybrominated Diphenyl Ethers(PBDEs) in the submitted samples.

**According to the RoHS Directive 2011/65/EU**

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

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

Tested by

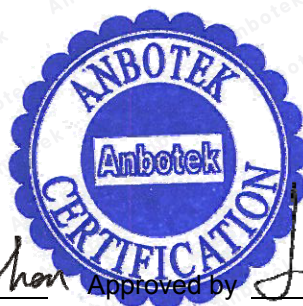
Wang Jie

Inspected by

Sahen Chen

Approved by

Li



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## Test Method:

### A. Screening test by XRF spectroscopy

XRF screening limits in mg/kg for regulated elements according to IEC 62321-3-1:2013.

Element	Limit of IEC 62321-3-1:2013. Unit (mg/kg)		MDL	
	Polymers and metals	Composite material	Polymers	Other material
Pb	$BL \leq (700-3\sigma) < X < (1300+3\sigma)$ $\leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma)$ $\leq OL$	10 mg/kg	50 mg/kg
Cd	$BL \leq (70-3\sigma) < X < (130+3\sigma)$ $\leq OL$	$LOD \leq (50-3\sigma) < X < (150+3\sigma)$ $\leq OL$	10 mg/kg	50 mg/kg
Hg	$BL \leq (700-3\sigma) < X < (1300+3\sigma)$ $\leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma)$ $\leq OL$	10 mg/kg	50 mg/kg
Cr	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$	10 mg/kg	50 mg/kg
Br	$BL \leq (300-3\sigma) < X$	$BL \leq (250-3\sigma) < X$	10 mg/kg	50 mg/kg

## Note:


- BL = Under the XRF screening limit
- OL = Further chemical test will be conducted while result is above the screening limit
- X= The symbol "X" marks the region where further investigation is necessary
- 3σ= The reproducibility of analytical instruments
- LOD= Detection limit

### B. Chemical Test

Test Item(s)	Test Method	Measured Equipment(s)	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 Ed.1.0	ICP-OES	2 mg/kg	1000 mg/kg
Hexavalent Chromium Cr(VI)	IEC 62321-7-1:2015 Ed.1.0	UV-VIS	/	1000 mg/kg
	IEC 62321:2008 Ed.1 Annex C	UV-VIS	2 mg/kg	1000 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

## Shenzhen Anbotek Compliance Laboratory Limited

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## Test Results:

Sample No.	Sample Description	Tested Items	XRF Screening Test Unit (mg/kg)	Chemical Test Unit (mg/kg)	Conclusion
1	Silvery metal (USB)	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	/	/	
2	Pin	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	/	/	
3	White inner plastic	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	
4	Black plastic scarfskin	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	
5	Black jacket tube	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	
6	White jacket	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	

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Sample No.	Sample Description	Tested Items	XRF Screening Test Unit (mg/kg)	Chemical Test Unit (mg/kg)	Conclusion
7	Red jacket	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	
8	Gray jacket	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	
9	Green jacket	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	
10	Cable core	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	/	/	
11	Black plastic scarfskin	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	
12	Black magnet ring	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	



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Sample No.	Sample Description	Tested Items	XRF Screening Test Unit (mg/kg)	Chemical Test Unit (mg/kg)	Conclusion
13	Silvery metal pole	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	/	/	
14	Black plastic (button)	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	
15	Black plastic shell	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	
16	Screw with black coating	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	/	/	
17	White label	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	
18	Black plastic (foot pad)	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	

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Sample No.	Sample Description	Tested Items	XRF Screening Test Unit (mg/kg)	Chemical Test Unit (mg/kg)	Conclusion
19	Black plastic baseboard	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	
20	Milky soft plastic	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	
21	Transparent plastic plate	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	
22	Milky soft plastic	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	
23	Chip LED	Pb	BL	/	PASS
		Cd	LOD	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	
24	Chip capacitor	Pb	BL	/	PASS
		Cd	LOD	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	

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Sample No.	Sample Description	Tested Items	XRF Screening Test Unit (mg/kg)	Chemical Test Unit (mg/kg)	Conclusion
25	IC	Pb	BL	/	PASS
		Cd	LOD	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	
26	Soldering tin	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	/	/	
27	PCB	Pb	BL	/	PASS
		Cd	LOD	/	
		Hg	BL	/	
		Cr(Cr(VI) )	BL	/	
		Br(PBBs&PBDEs)	BL	/	

**Note:**

-MDL = Method Detection Limit

-N.D. = Not Detected (<MDL)

-mg/kg = ppm = parts per million

-Negative = Absence of Cr(VI) , the detected Cr(VI) concentration in the boiling water extraction solution is less than 0.10ug/cm<sup>2</sup>.

-Positive = Presence of Cr(VI), the detected Cr(VI) concentration in the boiling water extraction solution is equal to or greater than 0.13ug/cm<sup>2</sup>.

**Remark:**

- The screening results are only used for reference.

- 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.

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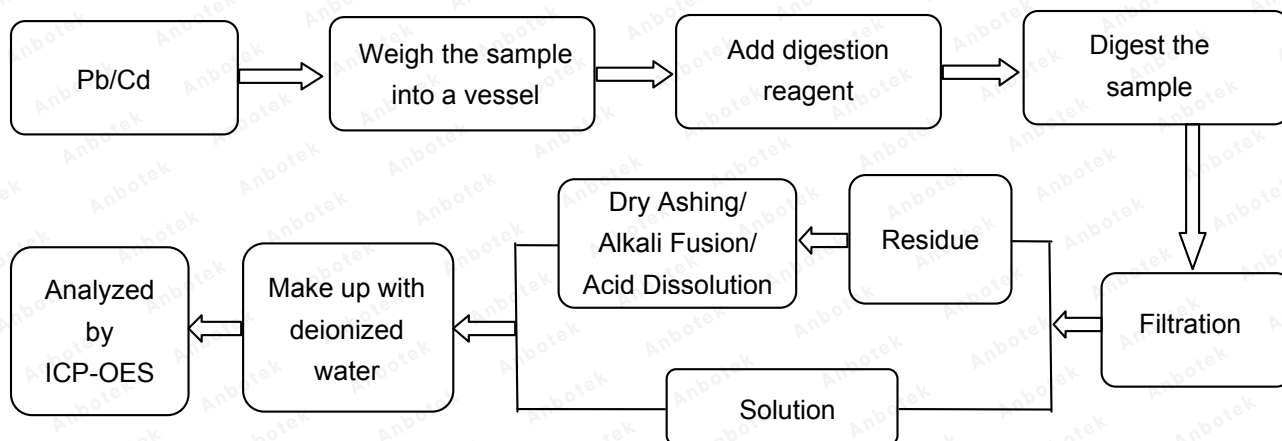
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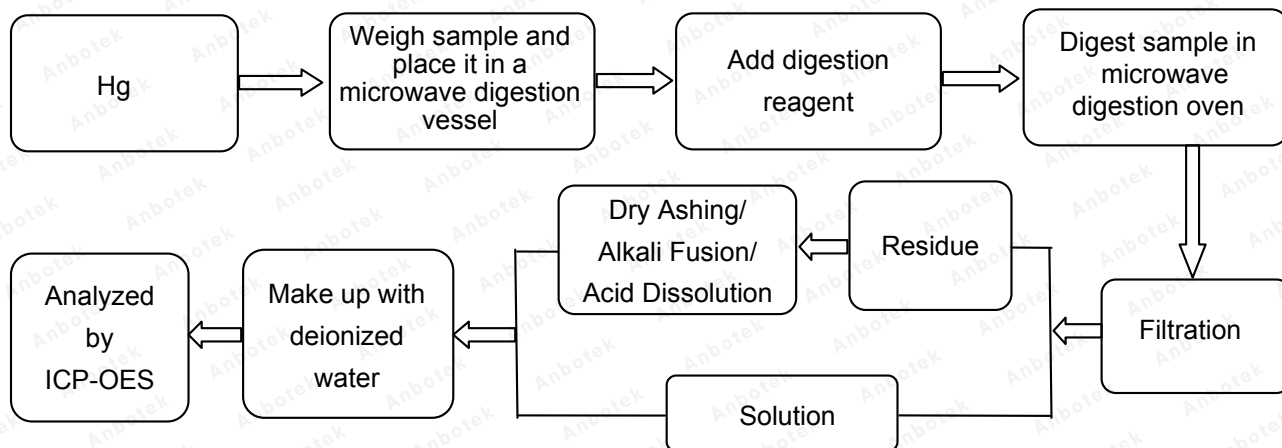
## Test Process:

The sample(s) had been dissolved totally tested for Lead, Cadmium, Mercury.

### ◆ IEC 62321-5:2013 Ed.1.0



### ◆ IEC 62321-4:2013 Ed.1.0





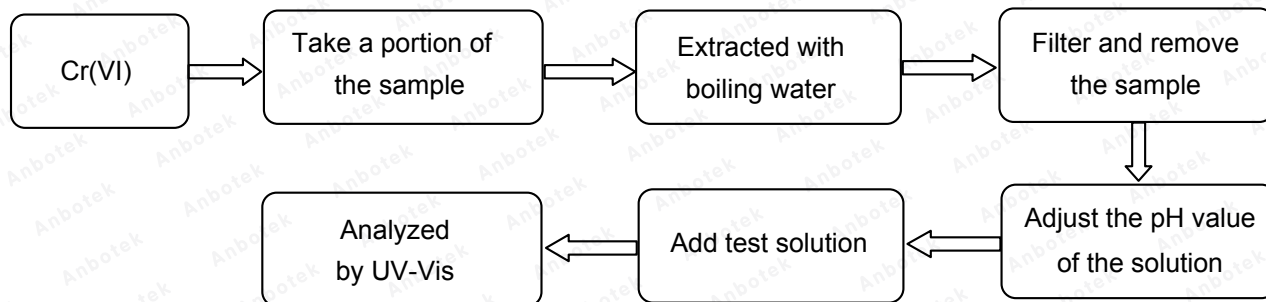
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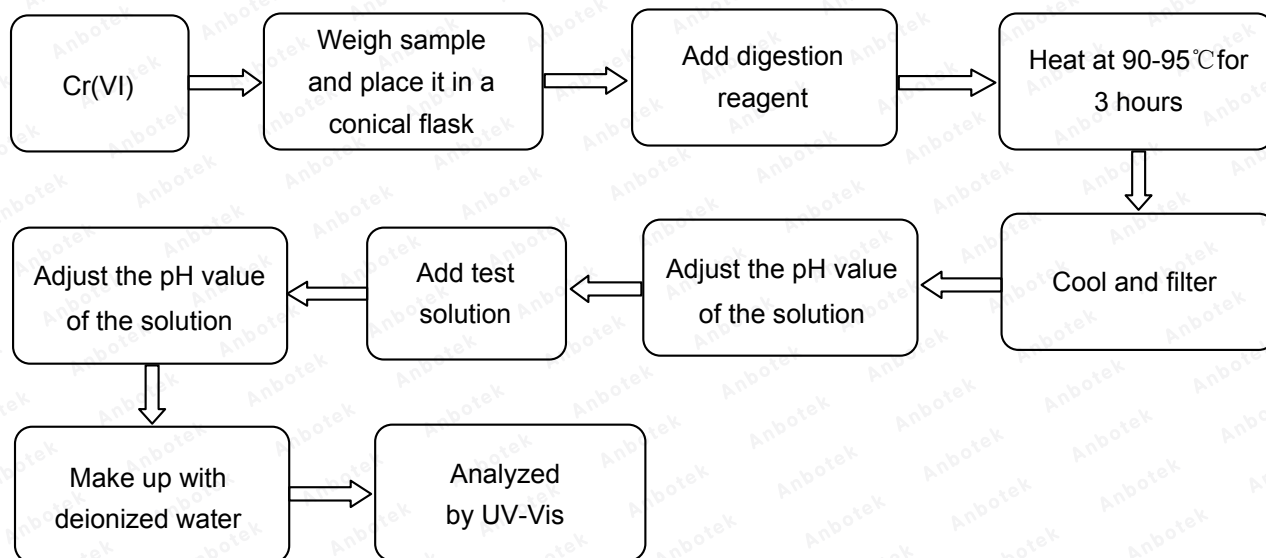
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◆ IEC 62321-7-1:2015 Ed.1.0



◆ IEC 62321:2008 Ed.1 Annex C



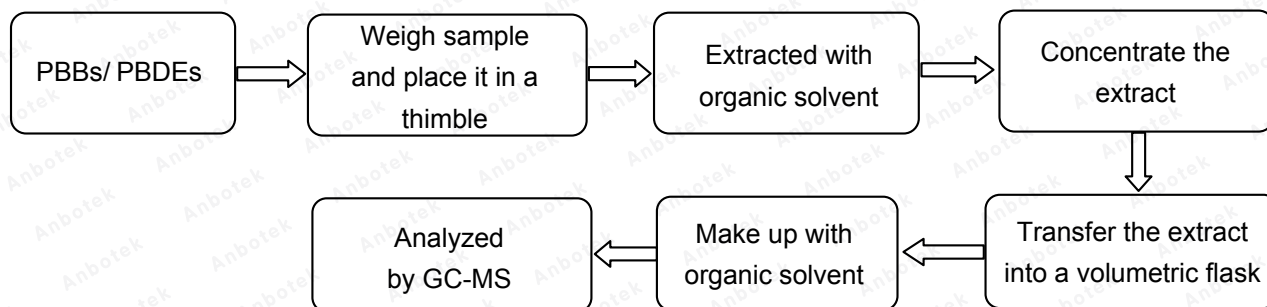
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◆ IEC 62321-6:2015 Ed.1.0



Photograph of Sample





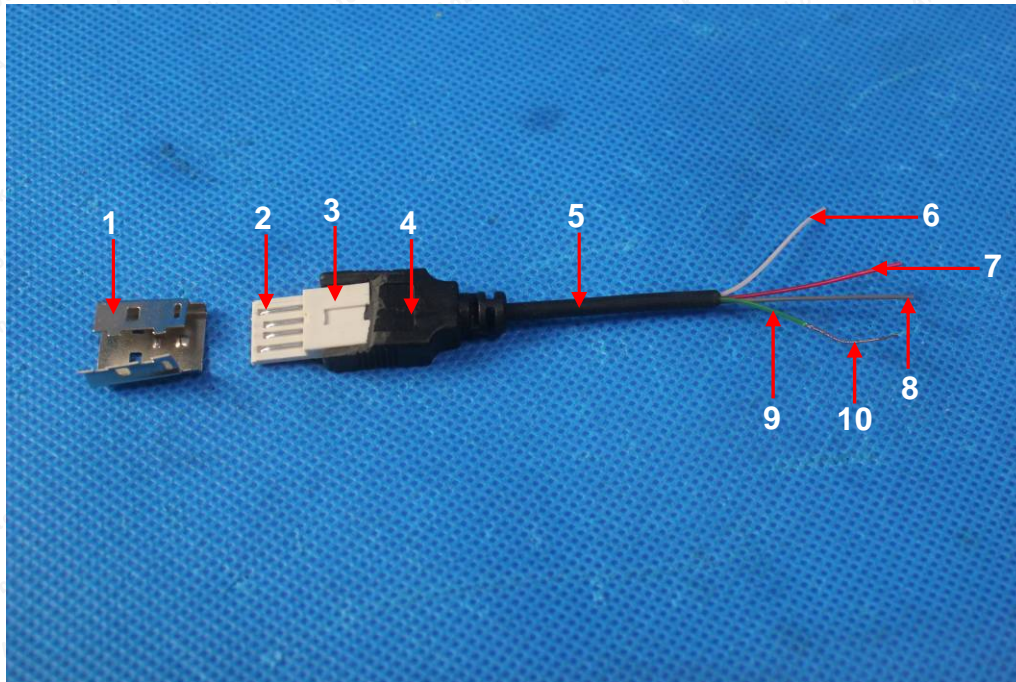
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Photo(s) of the tested component(s)



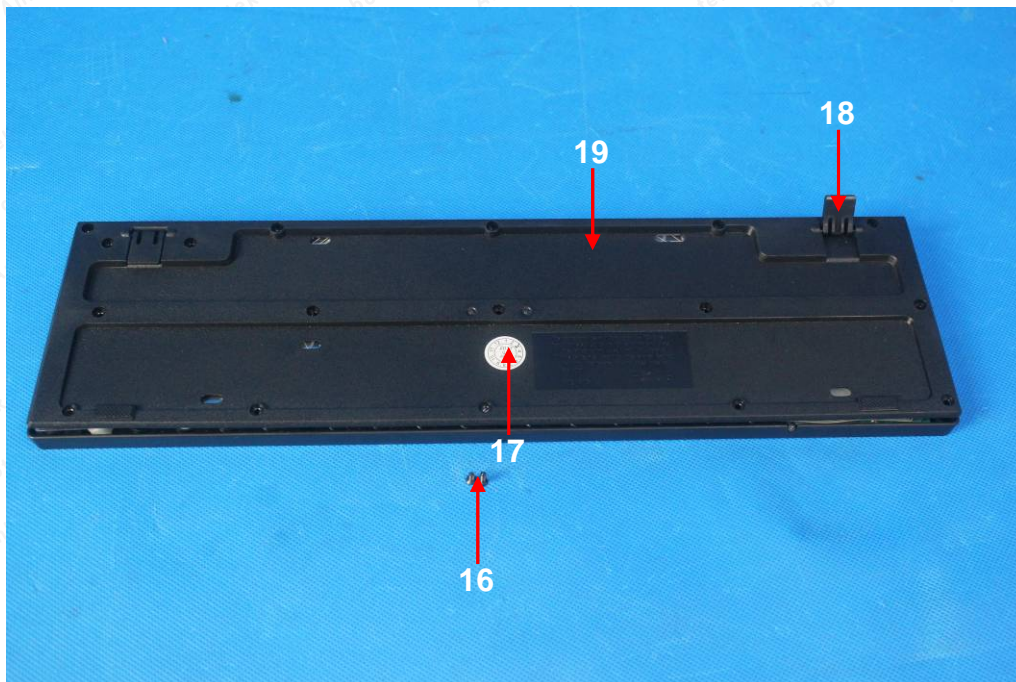


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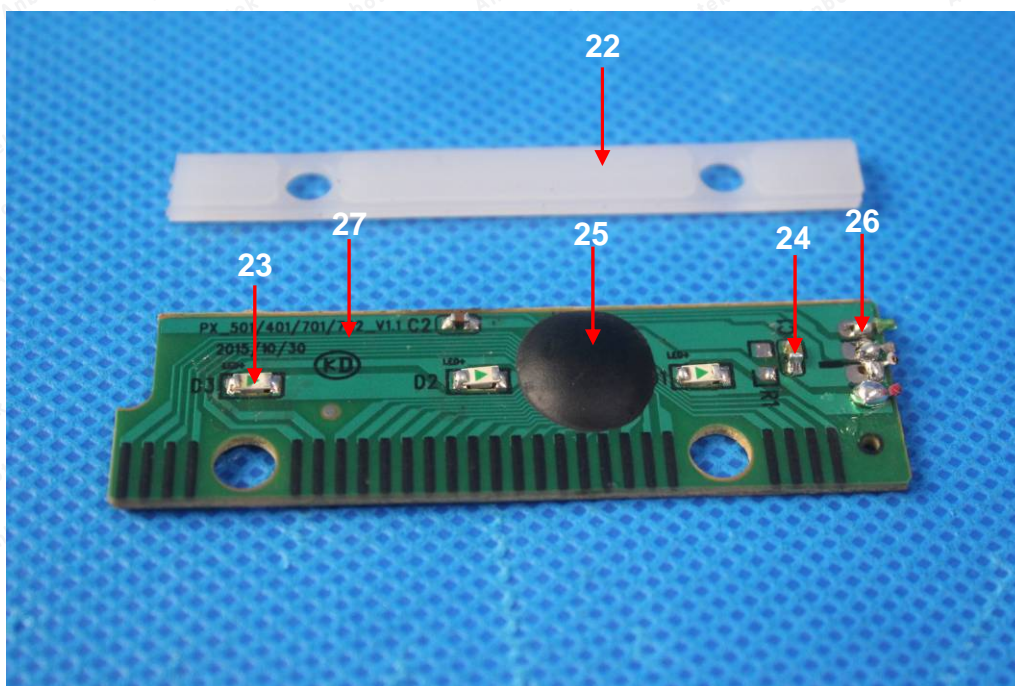
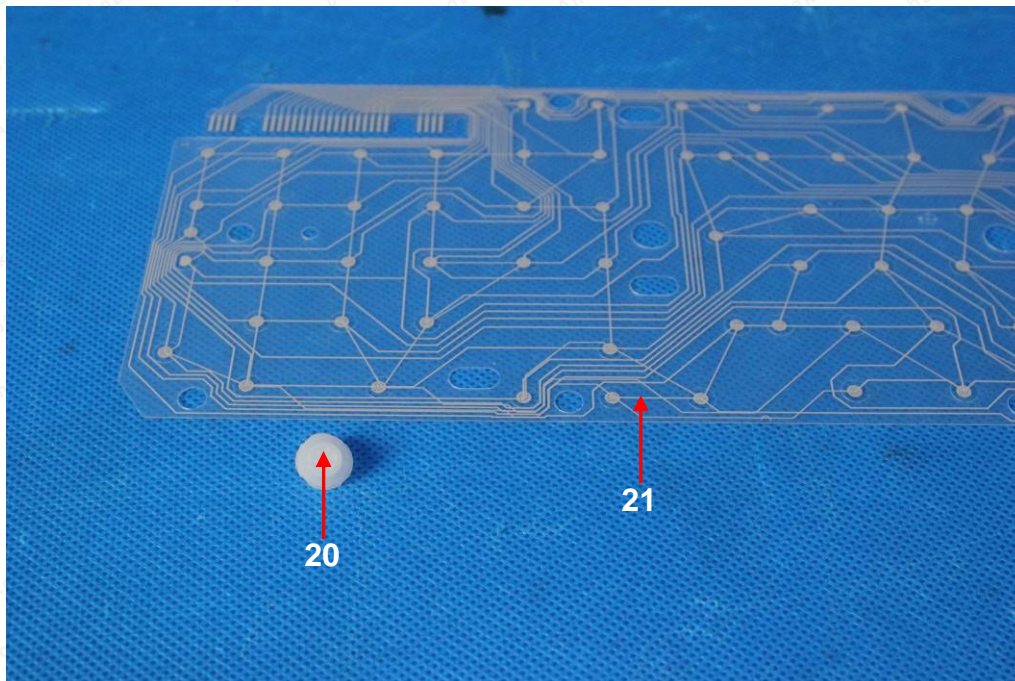


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\*\*\*\*\* End of Report \*\*\*\*\*

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