

Anbotek

Product Safety

安博检测

Anbotek Testing

Report No.: SZARR190222014-01

Test Report

Client Name :

Address :

Product Name : POWER BANK

Date : Mar. 01, 2019

Shenzhen Anbotek Compliance Laboratory Limited

Shenzhen Anbotek Compliance Laboratory Limited

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Test Report

Report No.: SZARR190222014-01

Date: Mar. 01, 2019

Page 1 of 19

Applicant :

Address :

The submitted sample and sample information was/were submitted and identified by/on the behalf of the client

Sample Name : POWER BANK

Model No. :

Manufacturer :

Trade Mark : Cager

Sample Received Date : Feb. 22, 2019

Testing Period : Feb. 22, 2019 to Mar. 01, 2019

Test Requested : As specified by client, to test the Lead(Pb), Cadmium(Cd), Mercury(Hg), Hexavalent Chromium(Cr(VI)), Polybrominated Biphenyl(PBBs) and Polybrominated Diphenyl Ethers (PBDEs) in the submitted sample in accordance with 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 Liqing Yang
Liqing Yang
Test engineer

Reviewed by Niki You
Niki You
Test engineer

Approved by Leo Li
Leo Li
* Approved * Authorized signatory



Test Report

Report No.: SZARR190222014-01

Date: Mar. 01, 2019

Page 2 of 19

Test Method:**A. XRF Screening Test**

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)		
	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	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (700-3\sigma) < X < (1300+3\sigma) \leq OL$	$BL \leq (500-3\sigma) < X < (1500+3\sigma) \leq OL$
Br	$BL \leq (300-3\sigma) < X$	N.A.	$BL \leq (250-3\sigma) < X$
Cr	$BL \leq (700-3\sigma) < X$	$BL \leq (700-3\sigma) < X$	$BL \leq (500-3\sigma) < X$

Note:

-N.A. = Not Applicable

-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	ICP-OES	2 mg/kg	1000 mg/kg
Cadmium (Cd)	IEC 62321-5:2013		2 mg/kg	100 mg/kg
Mercury (Hg)	IEC 62321-4:2013+AMD1:2017		2 mg/kg	1000 mg/kg
Hexavalent Chromium Cr(VI)	IEC 62321-7-1:2015	UV-VIS	0.10μg/cm ²	1000 mg/kg
	IEC 62321-7-2:2017		2 mg/kg	
Polybrominated Biphenyls (PBBs)	IEC 62321-6:2015	GC-MS	5 mg/kg	1000 mg/kg
Polybrominated Diphenyl Ethers (PBDEs)	IEC 62321-6:2015		5 mg/kg	1000 mg/kg



Test Report

Report No.: SZARR190222014-01

Date: Mar. 01, 2019

Page 3 of 19

Test Results:

Sample No.	Sample Description	Tested Items	XRF Screening Test Unit (mg/kg)	Chemical Test Unit (mg/kg)	Conclusion
1	White plastic shell	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
2	Silvery metal block	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	X	Negative	
		Br(PBBs&PBDEs)	N.A.	/	
3	White plastic button	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
4	Black plastic jacket	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
5	Red plastic jacket	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
6	Black foam	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	

Test Report

Report No.: SZARR190222014-01

Date: Mar. 01, 2019

Page 4 of 19

Sample No.	Sample Description	Tested Items	XRF Screening Test Unit (mg/kg)	Chemical Test Unit (mg/kg)	Conclusion
7	Silvery metal shell	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	N.A.	/	
8	Black inner plastic	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
9	Pin	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	N.A.	/	
10	Silvery metal shell	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	X	Negative	
		Br(PBBs&PBDEs)	N.A.	/	
11	Black inner plastic	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
12	Silvery metal shell	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	N.A.	/	

Test Report

Report No.: SZARR190222014-01

Date: Mar. 01, 2019

Page 5 of 19

Sample No.	Sample Description	Tested Items	XRF Screening Test Unit (mg/kg)	Chemical Test Unit (mg/kg)	Conclusion
13	Grey inner plastic	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
14	Silvery metal frame	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	N.A.	/	
15	Black plastic button	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	X	N.D.	
16	Silvery metal shrapnel	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	N.A.	/	
17	White plastic shell	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
18	Chip capacitor	Pb	BL	/	PASS
		Cd	LOD	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	

Test Report

Report No.: SZARR190222014-01

Date: Mar. 01, 2019

Page 6 of 19

Sample No.	Sample Description	Tested Items	XRF Screening Test Unit (mg/kg)	Chemical Test Unit (mg/kg)	Conclusion
19	LED	Pb	BL	/	PASS
		Cd	LOD	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
20	Chip inductor	Pb	BL	/	PASS
		Cd	LOD	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
21	Chip audion	Pb	BL	/	PASS
		Cd	LOD	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
22	IC	Pb	BL	/	PASS
		Cd	LOD	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
23	Chip diode	Pb	BL	/	PASS
		Cd	LOD	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	X	N.D.	
24	Chip resistor	Pb	BL	/	PASS
		Cd	LOD	/	
		Hg	BL	/	
		Cr(Cr(VI))	X	N.D.	
		Br(PBBs&PBDEs)	BL	/	

Test Report

Report No.: SZARR190222014-01

Date: Mar. 01, 2019

Page 7 of 19

Sample No.	Sample Description	Tested Items	XRF Screening Test Unit (mg/kg)	Chemical Test Unit (mg/kg)	Conclusion
25	Soldering tin	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	N.A.	/	
26	Green PCB	Pb	BL	/	PASS
		Cd	LOD	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	X	N.D.	
27	Red enameled wire	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	N.A.	/	
28	Green enameled wire	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	N.A.	/	
29	Gold enameled wire	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	N.A.	/	
30	White soft plastic scarfskin	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	

Test Report

Report No.: SZARR190222014-01

Date: Mar. 01, 2019

Page 8 of 19

Sample No.	Sample Description	Tested Items	XRF Screening Test Unit (mg/kg)	Chemical Test Unit (mg/kg)	Conclusion
31	Silvery metal shell	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	X	Negative	
		Br(PBBs&PBDEs)	N.A.	/	
32	White inner plastic	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
33	Black inner plastic	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	
34	White inner plastic	Pb	BL	/	PASS
		Cd	BL	/	
		Hg	BL	/	
		Cr(Cr(VI))	BL	/	
		Br(PBBs&PBDEs)	BL	/	



Test Report

Report No.: SZARR190222014-01

Date: Mar. 01, 2019

Page 9 of 19

Note:

- 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.
- 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
- LOD= Detection limit
- MDL = Method Detection Limit
- N.A. = Not Applicable
- N.D. = Not Detected (<MDL)
- /=Not tested
- mg/kg = ppm = parts per million
- $\mu\text{g}/\text{cm}^2$ = microgramme per square centimetre
- Negative = Absence of Cr(VI) , the detected Cr(VI) concentration in the boiling water extraction solution is less than $0.10\mu\text{g}/\text{cm}^2$.
- Positive = Presence of Cr(VI), the detected Cr(VI) concentration in the boiling water extraction solution is equal to or greater than $0.13\mu\text{g}/\text{cm}^2$.



Test Report

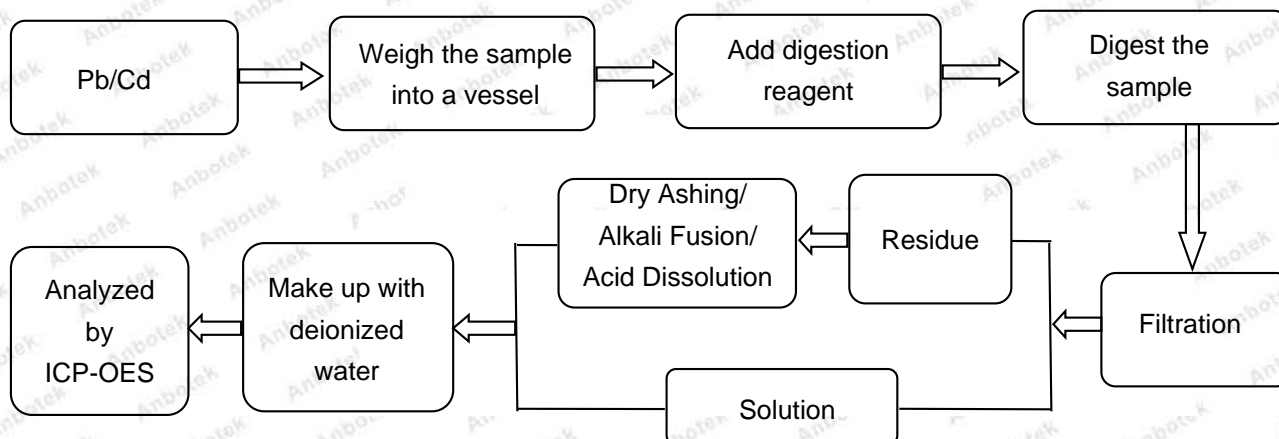
Report No.: SZARR190222014-01

Date: Mar. 01, 2019

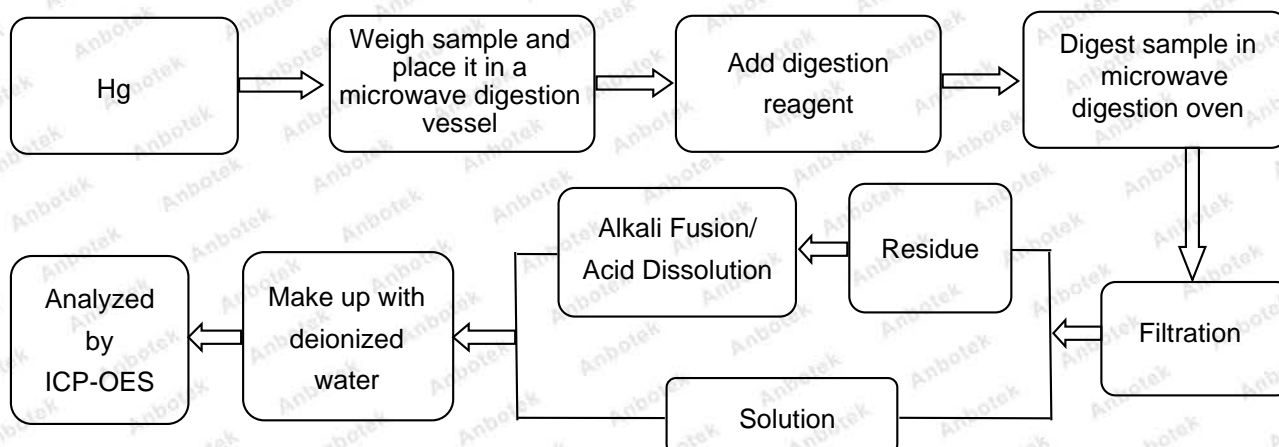
Page 10 of 19

Test Process:

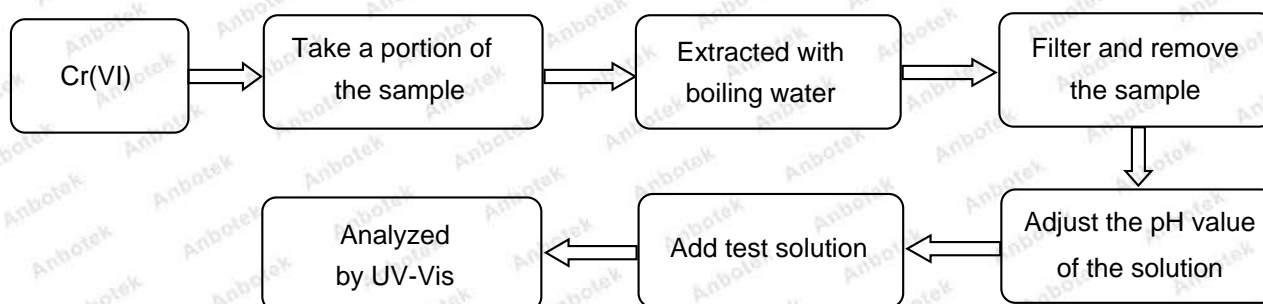
◆ IEC 62321-5:2013



◆ IEC 62321-4:2013+AMD1:2017



◆ IEC 62321-7-1:2015



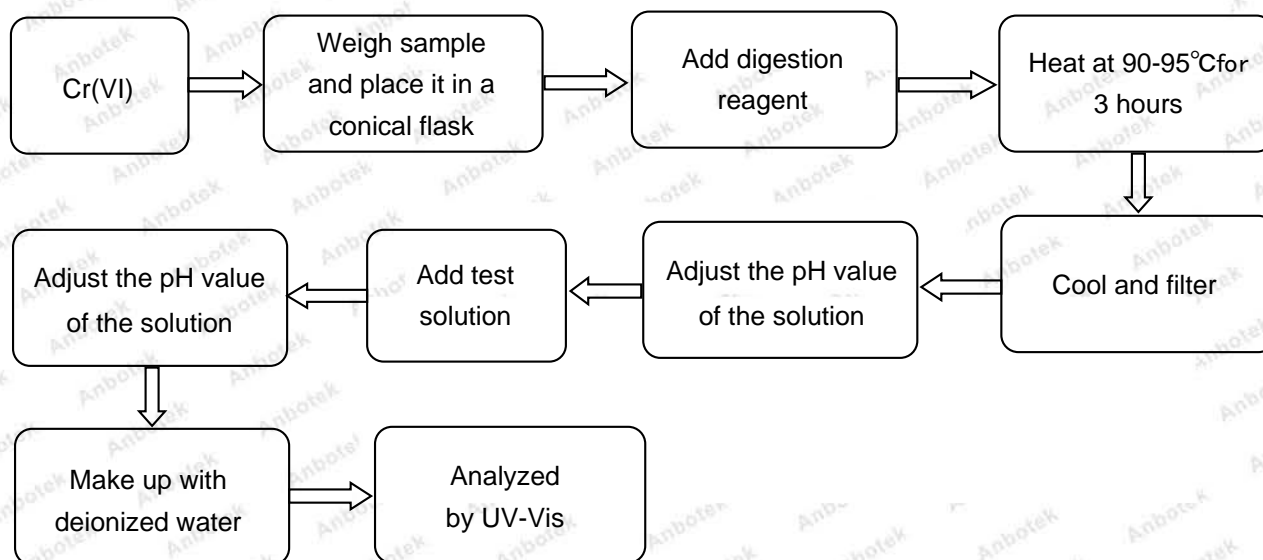
Test Report

Report No.: SZARR190222014-01

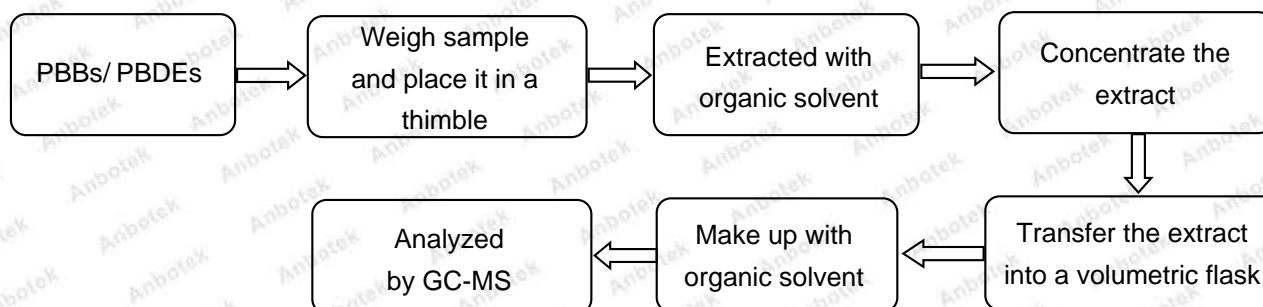
Date: Mar. 01, 2019

Page 11 of 19

◆ IEC 62321-7-2:2017



◆ IEC 62321-6:2015



Test Report

Report No.: SZARR190222014-01

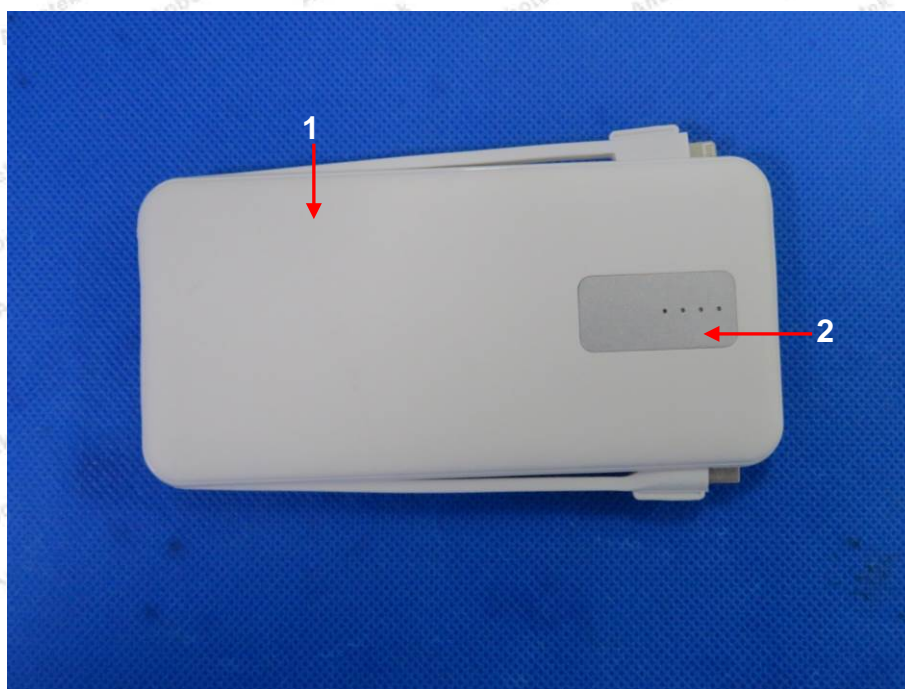
Date: Mar. 01, 2019

Page 12 of 19

Photograph of Sample



Photo(s) of the tested component(s)



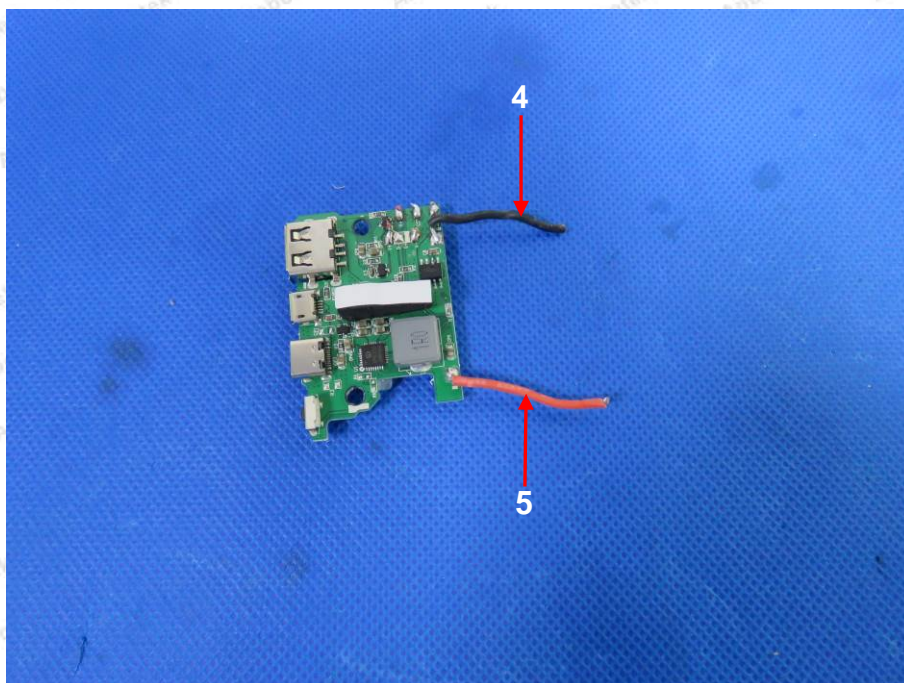
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Test Report

Report No.: SZARR190222014-01

Date: Mar. 01, 2019

Page 13 of 19



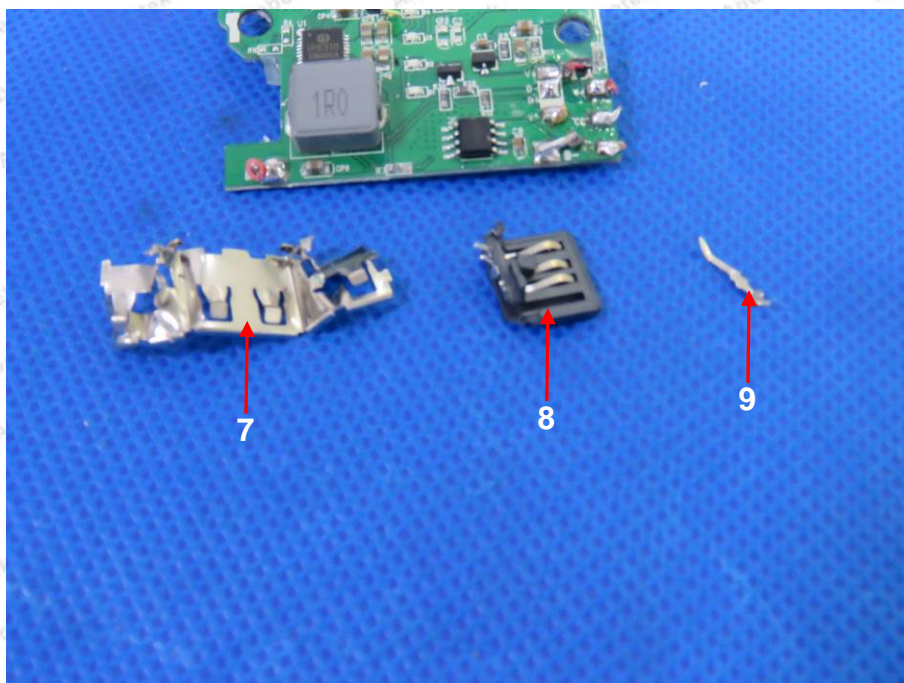
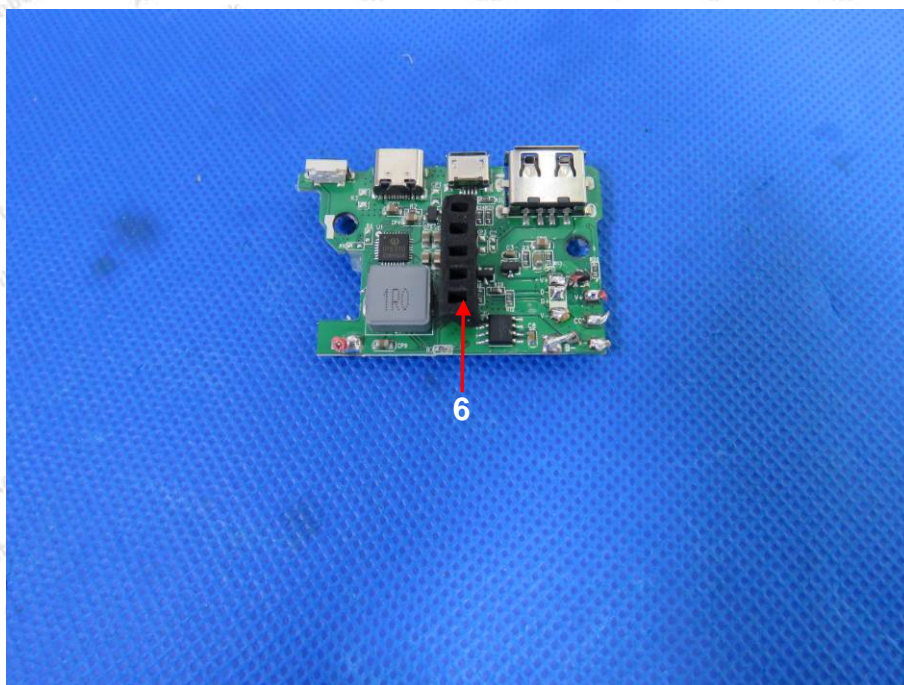
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Test Report

Report No.: SZARR190222014-01

Date: Mar. 01, 2019

Page 14 of 19



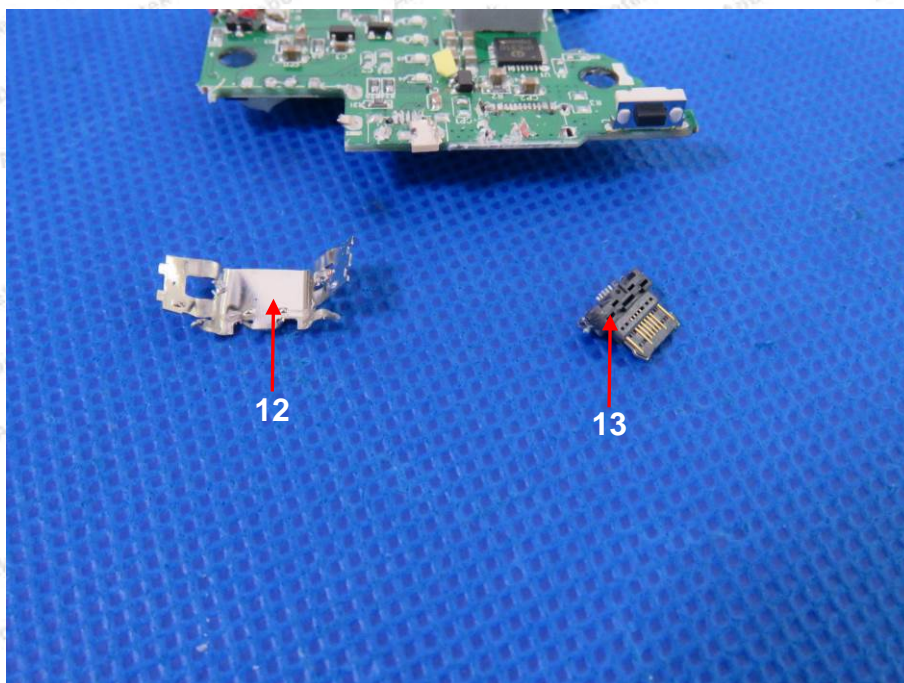
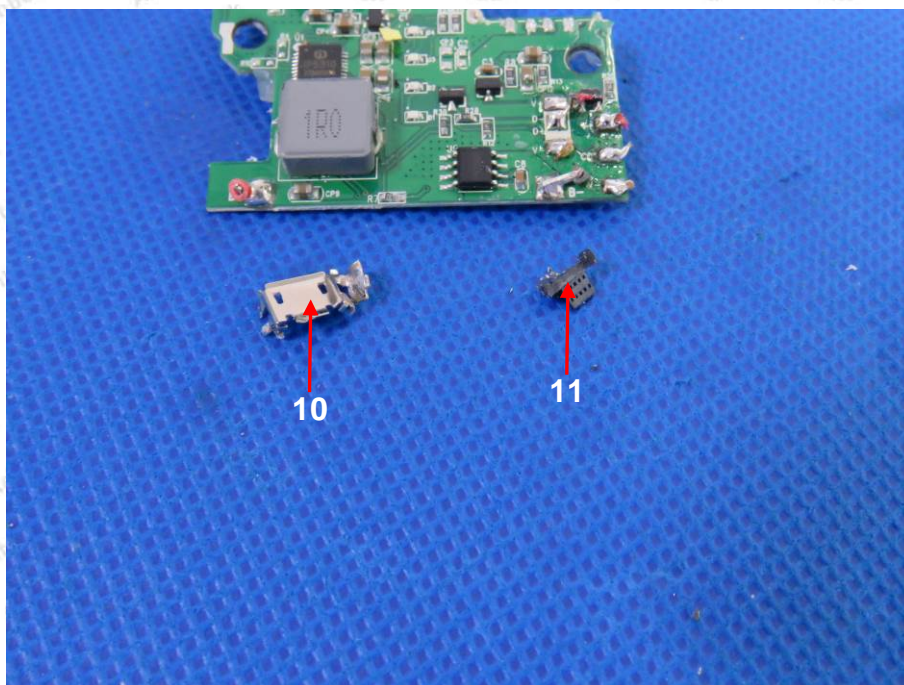
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Test Report

Report No.: SZARR190222014-01

Date: Mar. 01, 2019

Page 15 of 19

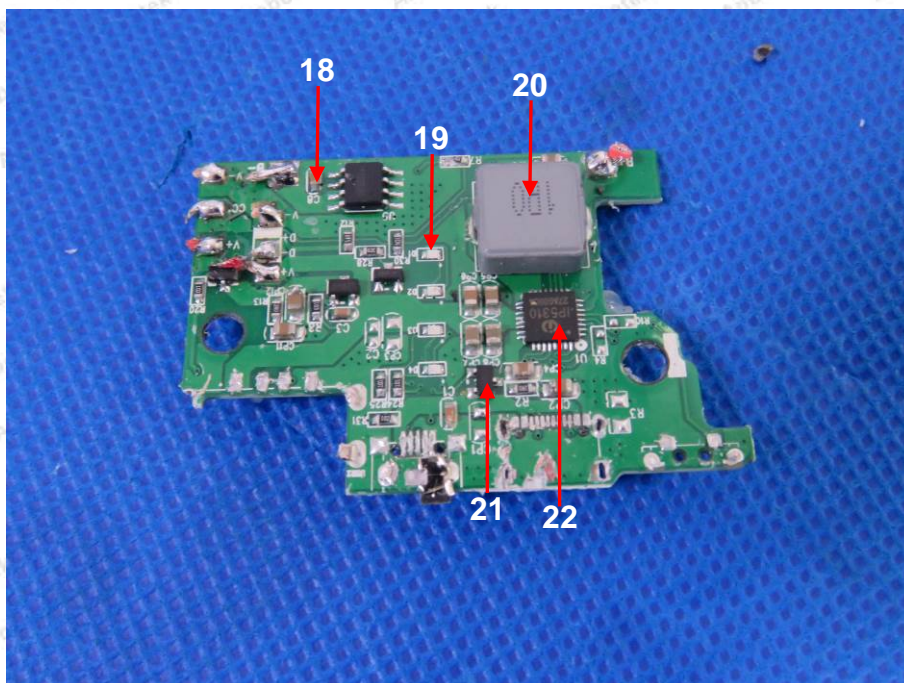
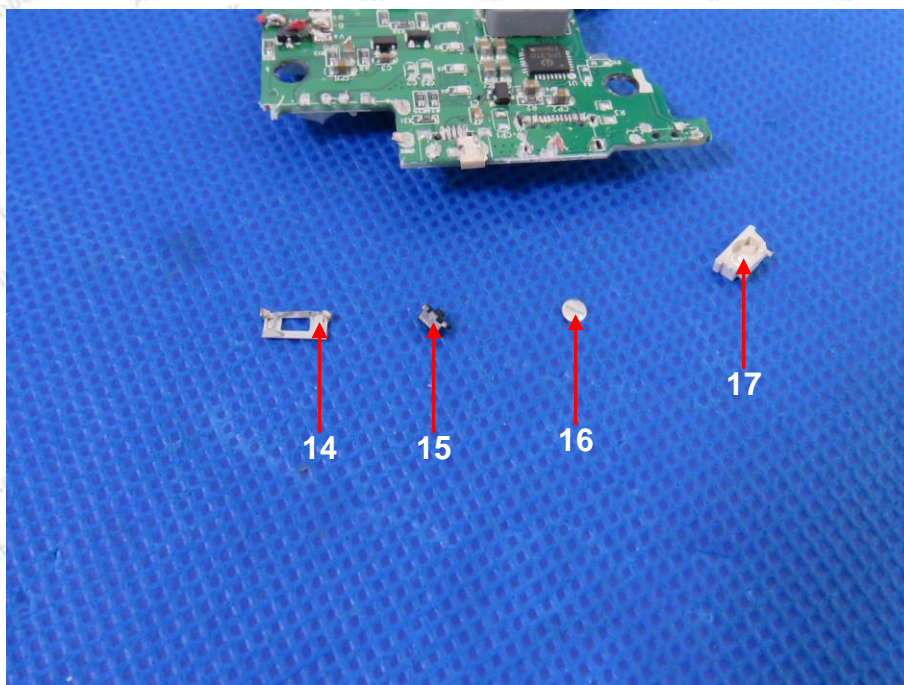


Test Report

Report No.: SZARR190222014-01

Date: Mar. 01, 2019

Page 16 of 19

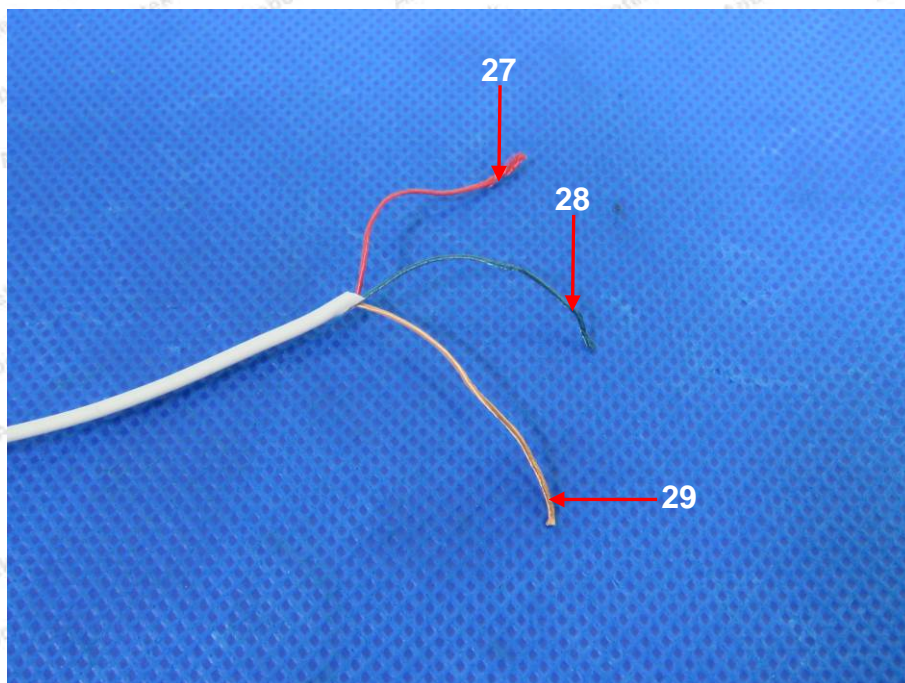
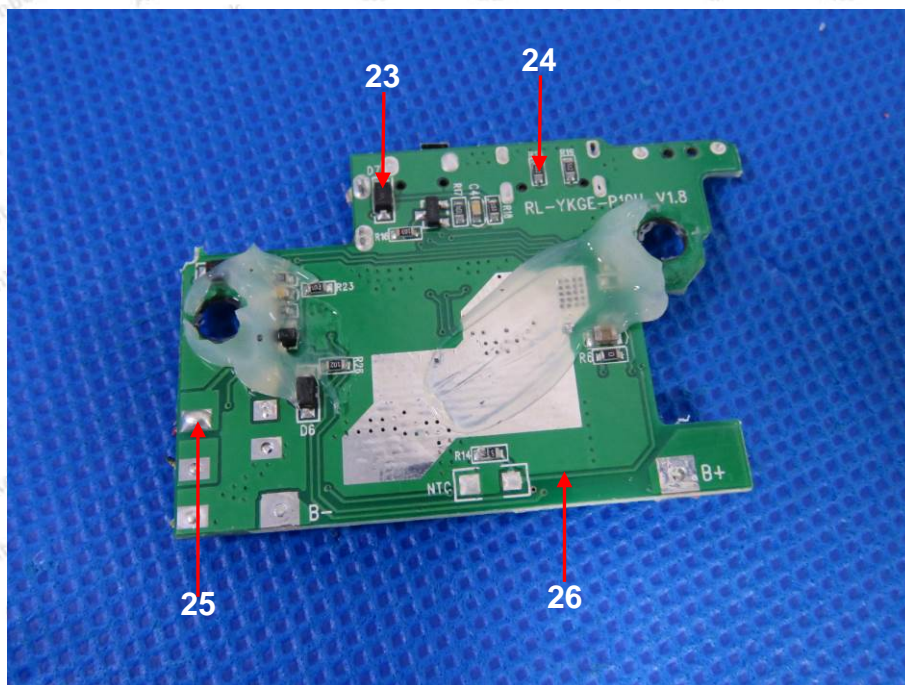


Test Report

Report No.: SZARR190222014-01

Date: Mar. 01, 2019

Page 17 of 19



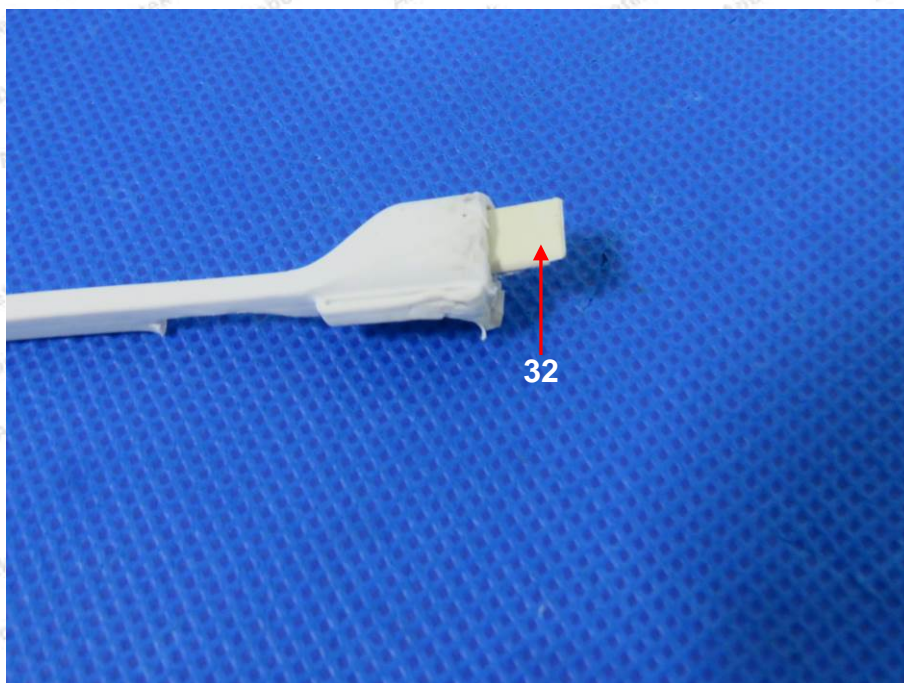
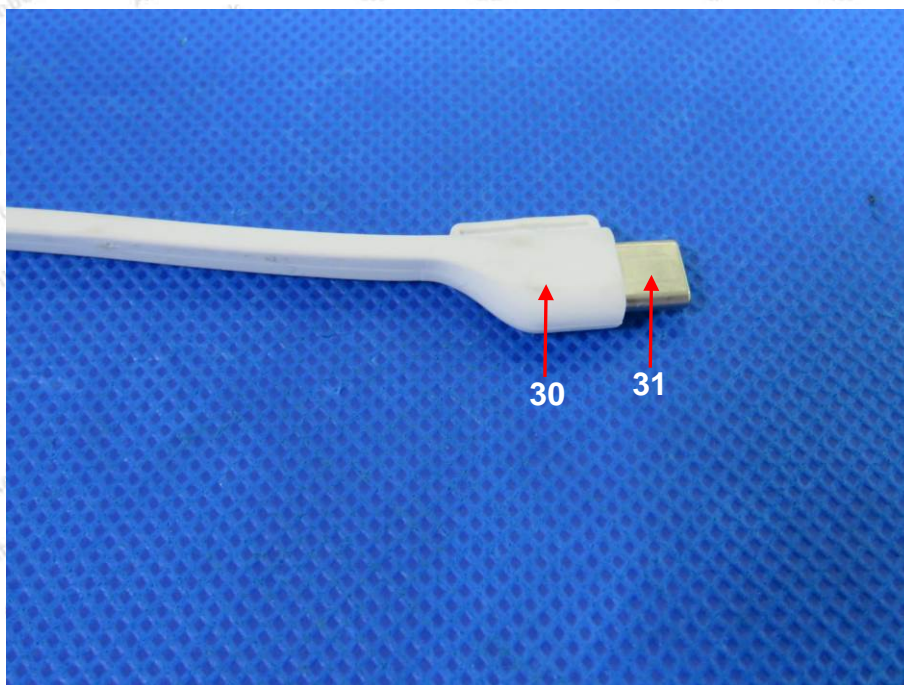
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Test Report

Report No.: SZARR190222014-01

Date: Mar. 01, 2019

Page 18 of 19

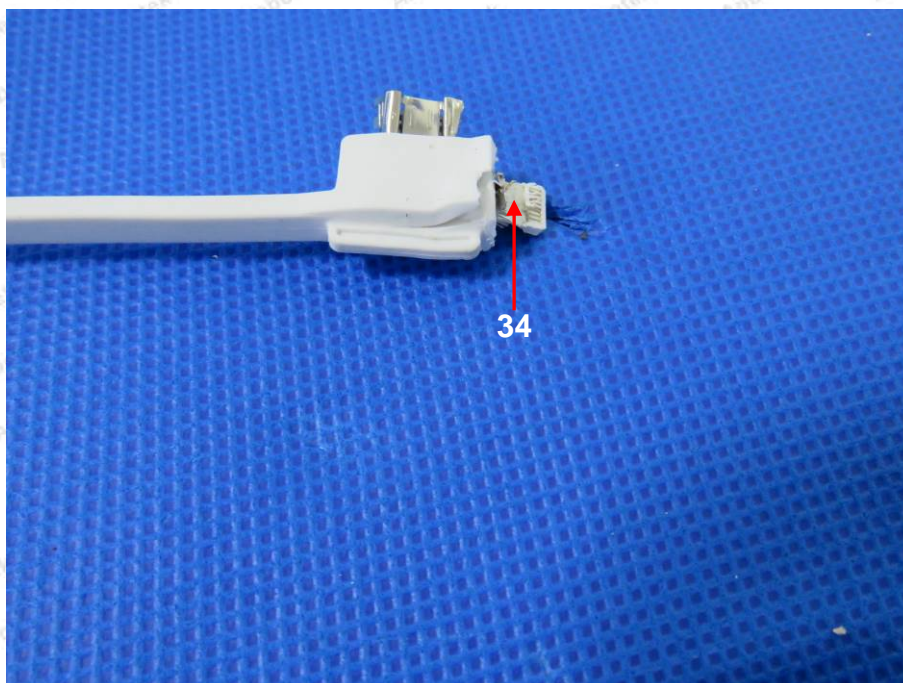
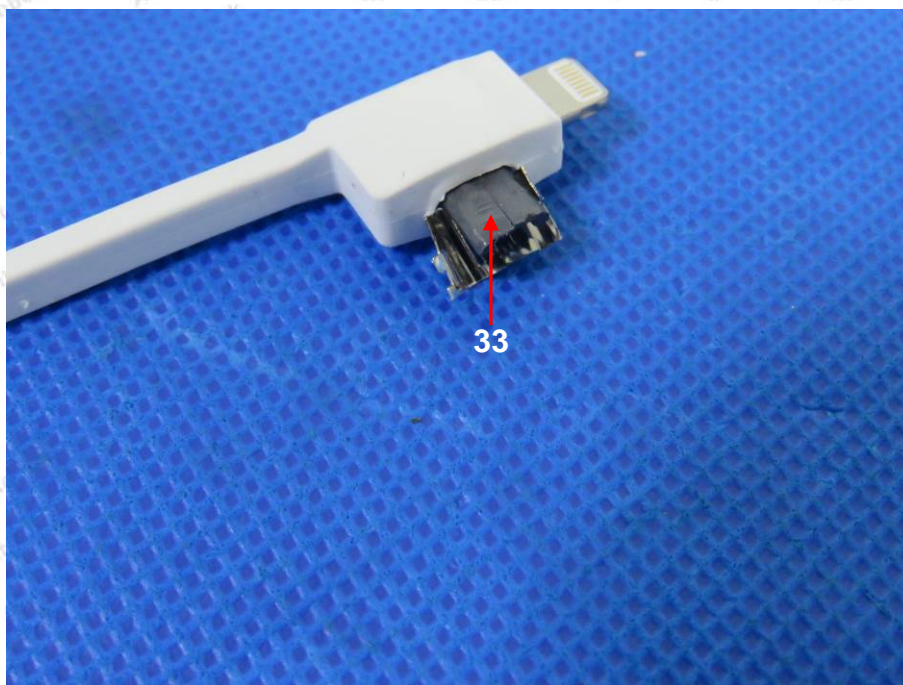


Test Report

Report No.: SZARR190222014-01

Date: Mar. 01, 2019

Page 19 of 19



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

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AB-RHS-03-a



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