

XRF Screening And Chemical Confirmation Test Report

No. : 230418049GZU-001

Date: Sep 6, 2023

Applicant: ELIT AS

Hellenvegen 9

Sample Description:

The following submitted sample(s) said to be:

Item Name	:	ELIT LST 320 charging station tester
Model No.	:	LST 320
Date of Sample Received	:	Apr 20, 2023 & Aug 22, 2023
Testing Period	:	Apr 20, 2023 to Aug 31, 2023

Tests conducted:

As requested by the applicant, refer to following page(s) for details.

Conclusion:

Tested Sample	Standard	Result
Tested components of submitted sample	Screening by XRF spectroscopy and chemical confirmation test for RoHS Directive 2011/65/EU and (EU) 2015/863	Pass

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch:
Prepared by:

Bryce Lai
Project Engineer

Reviewed by:



Michael Pang
Asst. Technical Supervisor

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Certain Hazardous Substance in Electrical and Electronic Equipment

Cadmium (Cd), Lead (Pb), Mercury (Hg), Chromium (Cr) and Bromine (Br) content were measured with reference to IEC 62321-3-1 Edition 1.0: 2013 by XRF spectroscopy and chemical confirmation test for RoHS restricted substances. And Polybrominated Biphenyls (PBBs), Polybrominated Diphenyl Ethers (PBDEs) and Phthalates content were determined by Gas Chromatographic-Mass Spectrometric (GC-MS).

(A) Results:

Screened Components	Items	XRF Results	Screened Results(phthalates)	Chemical Confirmation Result
1	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	ND		
	DEHP	NA	NT	ND
	BBP			ND
	DBP			ND
	DIBP			ND
2	Cd	ND	NA	Cr ⁶⁺ : Negative
	Pb	ND		
	Hg	ND		
	Cr	Inconclusive		
	Br	NT		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			
	DEHP	NA	NT	ND
3	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	ND		
	BBP			
	DBP			
	DIBP			
	DEHP			
4	CD	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	ND		
	DEHP	NA	NT	ND
	BBP			ND
	DBP			ND
	DIBP			ND



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Screened Components	Items	XRF Results	Screened Results(phthalates)	Chemical Confirmation Result
5	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	ND		
	DEHP	NA	P	NT
	BBP		P	
	DBP		P	
	DIBP		P	
6	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	ND		
	DEHP	NA	NT	ND
	BBP			ND
	DBP			ND
	DIBP			ND
7	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	NT		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			
8	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	NT		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			
9a	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	ND		
	DEHP	NA	NT	ND
	BBP			ND
	DBP			ND
	DIBP			ND



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Screened Components	Items	XRF Results	Screened Results(phthalates)	Chemical Confirmation Result
9b	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	ND		
	DEHP	NA	NT	ND
	BBP			ND
	DBP			ND
	DIBP			ND
9c	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	Detected		
	Br	NT		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			
9d	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	Detected		
	Br	NT		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			
9e	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	NT		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			
9f	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	NT		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			



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Screened Components	Items	XRF Results	Screened Results(phthalates)	Chemical Confirmation Result
9g	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	NT		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			
9h	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	NT		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			
10	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	ND		
	DEHP	NA	NT	ND
	BBP			ND
	DBP			ND
	DIBP			ND
11	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	NT		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			
12	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	NT		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			



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Screened Components	Items	XRF Results	Screened Results(phthalates)	Chemical Confirmation Result
13	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	ND		
	DEHP	NA	NT	ND
	BBP			ND
	DBP			ND
	DIBP			ND
14	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	ND		
	DEHP	NA	P	NT
	BBP			
	DBP			
	DIBP			
15	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	ND		
	DEHP	NA	P	NT
	BBP			
	DBP			
	DIBP			
16	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	NT		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			
17	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	NT		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			



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Screened Components	Items	XRF Results	Screened Results(phthalates)	Chemical Confirmation Result
18	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	NT		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			
19	Cd	ND	NA	NT
	Pb	>1500mg/kg ^{#2}		
	Hg	ND		
	Cr	ND		
	Br	ND		
	DEHP	NA	P	NT
	BBP		P	
	DBP		P	
	DIBP		P	
20a	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	ND		
	DEHP	NA	NT	ND
	BBP			ND
	DBP			ND
	DIBP			ND
20b	Cd	ND	NA	PBBs : ND PBDEs : ND
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	Inconclusive		
	DEHP	NA	NT	ND
	BBP			ND
	DBP			ND
	DIBP			ND
20c	Cd	ND	NA	PBBs : ND PBDEs : ND
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	Inconclusive		
	DEHP	NA	NT	ND
	BBP			ND
	DBP			ND
	DIBP			ND



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Screened Components	Items	XRF Results	Screened Results(phthalates)	Chemical Confirmation Result
20d	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	NT		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			
21	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	Detected		
	DEHP	NA	P	NT
	BBP		P	
	DBP		P	
	DIBP		P	
22	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	ND		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			
	Cd	ND		
23	Pb	>1500mg/kg ^{#1}	NA	NT
	Hg	ND		
	Cr	Detected		
	Br	ND		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			
	Cd	ND		
	Pb	>1500mg/kg ^{#1}		
24	Hg	ND	NA	NT
	Cr	Detected		
	Br	ND		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			
	Cd	ND		
	Pb	>1500mg/kg ^{#1}		



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Screened Components	Items	XRF Results	Screened Results(phthalates)	Chemical Confirmation Result
25	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	ND		
	DEHP	NA	P	NT
	BBP		P	
	DBP		P	
	DIBP		P	
26a	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	ND		
	DEHP	NA	NT	ND
	BBP			ND
	DBP			ND
	DIBP			ND
26b	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	NT		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			
27	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	ND		
	DEHP	NA	P	NT
	BBP		P	
	DBP		P	
	DIBP		P	
28	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	ND		
	DEHP	NA	P	NT
	BBP		P	
	DBP		P	
	DIBP		P	



Screened Components	Items	XRF Results	Screened Results(phthalates)	Chemical Confirmation Result
29	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	NT		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			
30	Cd	ND	NA	NT
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	NT		
	DEHP	NA	NA	NA
	BBP			
	DBP			
	DIBP			
31	Cd	ND	NA	PBBs : ND PBDEs : ND
	Pb	ND		
	Hg	ND		
	Cr	ND		
	Br	Inconclusive		
	DEHP	NA	P	NT
	BBP		P	
	DBP		P	
	DIBP		P	

Detected = Below the lower screening limit of table (B1) and pass

ND = Not detected

NT = Not tested

NA = Not applicable

Negative = The Cr (VI) concentration is less than 0.10 µg/cm². The sample is negative for Cr (VI).

Remark:

(# 1) = As claimed by the declaration submitted from the applicant, the Lead content of the components is coming from the constituent of glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or a glass or ceramic matrix compound of the electrical and electronic component only. According to EU RoHS Directive (2011/65/EU) Annex III 7(c)-I, Lead in this component can be exempted.

(# 2) = As claimed by the declaration submitted from the applicant, the Lead content of the component comes from the constituent of high melting temperature type solders (i.e. Lead-based alloys containing 85% by weight or more Lead) only. According to EU RoHS Directive (2011/65/EU) Annex III 7(a), Lead in high melting temperature type solders of the component can be exempted.



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(B) Screening Limits**(B1). XRF Screening Limits in mg/kg for Regulated Elements in Various Matrices**

Element	Polymer Materials	Metallic Materials	Composite Materials
Cd	$P \leq 70 < X < 130 \leq F$	$P \leq 70 < X < 130 \leq F$	$P \leq 70 < X < 150 \leq F$
Pb	$P \leq 700 < X < 1300 \leq F$	$P \leq 700 < X < 1300 \leq F$	$P \leq 500 < X < 1500 \leq F$
Hg	$P \leq 700 < X < 1300 \leq F$	$P \leq 700 < X < 1300 \leq F$	$P \leq 500 < X < 1500 \leq F$
Cr	$P \leq 700 < X$	$P \leq 700 < X$	$P \leq 500 < X$
Br	$P \leq 300 < X$	Not applicable	$P \leq 250 < X$

XRF spectrometry provides information on the total quantity of each element present in the sample, but does not identify compounds or valence states of the elements. Therefore, special attention shall be paid when screening for chromium and bromine, where the result will reflect only the total chromium and total bromine present. The presence of Cr(VI) or the brominated flame retardants PBB or PBDE shall be confirmed by a verification test procedure.

P = Pass

X = Inconclusive result

F = Fail

mg/kg = milligram per kilogram = ppm

(B2). Preliminary screening test will be used for phthalates, if the results exceed the warning area in the following table, further chemical methods will be conducted to confirm the exact content by GC/MS.

Phthalates	Polymer
Bis(2-ethylhexyl) phthalate (DEHP)	$P \leq 600 < X$
Butyl benzyl phthalate (BBP)	$P \leq 600 < X$
Dibutyl phthalate (DBP)	$P \leq 600 < X$
Diisobutyl phthalate (DIBP)	$P \leq 600 < X$

P = Pass

X = Inconclusive result



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(C) Estimated Detection Limits in mg/kg for Regulated Elements in Various Matrices

Element	Polymer Materials	Metallic Materials	Composite Materials
Cd	50	70	70
Pb	100	200	200
Hg	100	200	200
Cr	100	200	200
Br	200	Not applicable	200

Disclaimers:

This XRF Screening and Chemical Confirmation Test 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 and Chemical Confirmation Test Report is sufficient for its/his/her purposes.

The results shown in this XRF Screening and Chemical Confirmation Test 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 is required to obtain quantitative data.

(D) Chemical Test Methods:

Test Item	Test Method	Detection Limit
Cadmium (Cd) Content	With reference to IEC 62321-5 Edition 1.0: 2013, by acid digestion and determined by ICP - OES	10 mg/kg
Lead (Pb) Content	With reference to IEC 62321-5 Edition 1.0: 2013, by acid digestion and determined by ICP - OES	10 mg/kg
Mercury (Hg) Content	With reference to IEC 62321-4 Edition 1.1: 2017, by acid digestion and determined by ICP - OES	10 mg/kg
Chromium (VI)(Cr ⁶⁺) Content	With reference to IEC 62321-7-2 Edition 1.0: 2017, Hexavalent chromium – Determination of hexavalent chromium (Cr(VI) in polymers and electronics by the colorimetric method	10 mg/kg
Chromium (VI) (Cr ⁶⁺) Content	With reference to IEC 62321-7-1 Edition 1.0: 2015, by boiling water extraction and determined by UV-VIS spectrophotometer	0.10 µg/cm ²
Polybrominated Biphenyls (PBBs) Content	With reference to IEC 62321-6 Edition 1.0: 2015, by solvent extraction and determined by GC/MS and further HPLC confirmation when necessary	100 mg/kg for single compound
Polybrominated Diphenyl Ethers (PBDEs) Content	With reference to IEC 62321-6 Edition 1.0: 2015, by solvent extraction and determined by GC/MS and further HPLC confirmation when necessary	100 mg/kg for single compound
Phthalates (DEHP, BBP, DBP, DIBP) Content	With reference to IEC 62321-8 Edition 1.0: 2017, by solvent extraction and determined by GC/MS	100 mg/kg for single compound



(E) RoHS Requirement:

Restricted Substances	Limits
Cadmium (Cd)	0.01% (100 mg/kg)
Lead (Pb)	0.1% (1000 mg/kg)
Mercury (Hg)	0.1% (1000 mg/kg)
Chromium (VI) (Cr ⁶⁺)	0.1% (1000 mg/kg)
Polybrominated Biphenyls (PBBs)	0.1% (1000 mg/kg)
Polybrominated Diphenyl Ethers (PBDEs)	0.1% (1000 mg/kg)
Phthalates (DEHP, BBP, DBP, DIBP)	0.1% (1000 mg/kg)

The above limits were quoted from 2011/65/EU and (EU) 2015/863 for homogeneous material.

Remark:

As requested by the applicant, only the selected components listed in this report were tested, and other components not mentioned were not conducted.



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Screened components:

- (1) Black plastic
- (2) Black treated metal(screw)
- (3) Black plastic
- (4) Semi-transparent white plastic
- (5) Black soft plastic
- (6) Black foam
- (7) Silvery metal
- (8) Solder
- (9) Switch
- (9a) Black plastic
- (9b) White plastic
- (9c) Silvery metal(spring)
- (9d) Silvery metal(spring)
- (9e) Silvery/copper color metal(point)
- (9f) Silvery metal
- (9g) Silvery/copper color metal(point)
- (9h) Silvery metal
- (10) White paper label with black/blue printing
- (11) Silvery metal
- (12) Silvery metal
- (13) Black plastic
- (14) Red soft plastic(wire covering)
- (15) Black soft plastic(wire covering)
- (16) Silvery metal wire
- (17) Solder
- (18) Solder
- (19) Black body with silvery metal (SMD diode)
- (20)
- (20a) White plastic with grey printing
- (20b) Transparent glue
- (20c) Black PCB
- (20d) Silvery metal(pin)
- (21) Black body with silvery metal (IC)
- (22) Brown ceramic with silvery metal(SMD capacitor)
- (23) White ceramic with black material & white printing & silvery metal(SMD resistor)
- (24) White ceramic with black material & white printing & silvery metal(SMD resistor)
- (25) Black body with silvery metal (IC)
- (26) IC
- (26a) Black body
- (26b) Silvery metal(pin)
- (27) Red plastic
- (28) Black plastic

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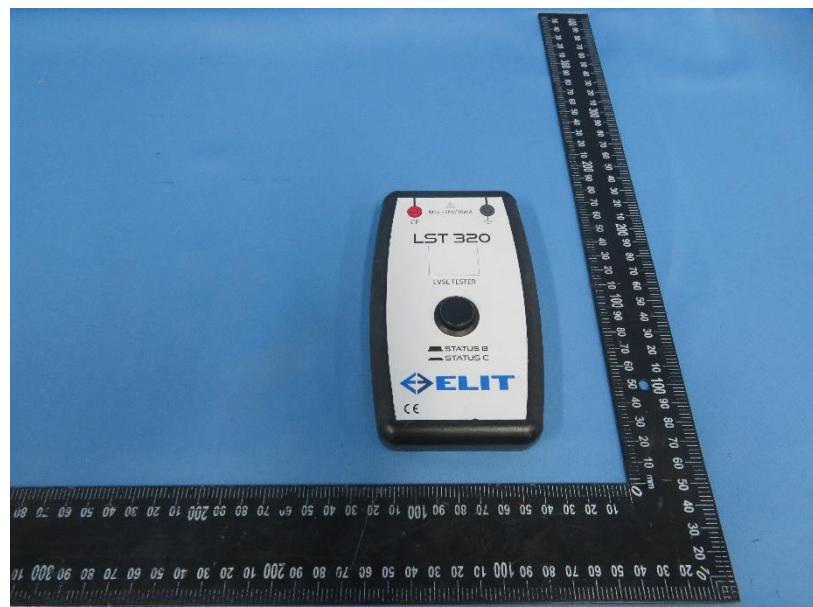
- (29) Silvery metal
- (30) Silvery metal(screw)
- (31) Black PCB

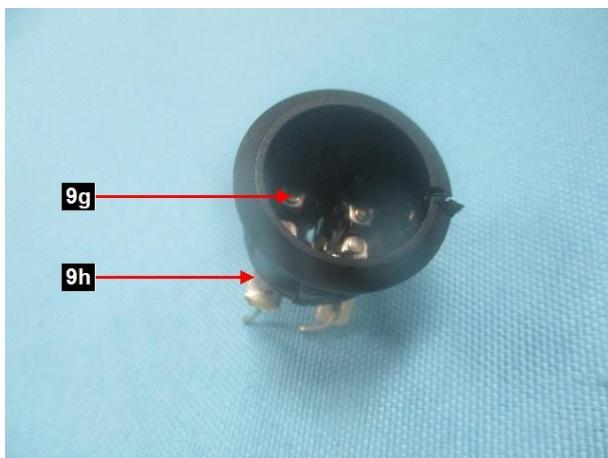
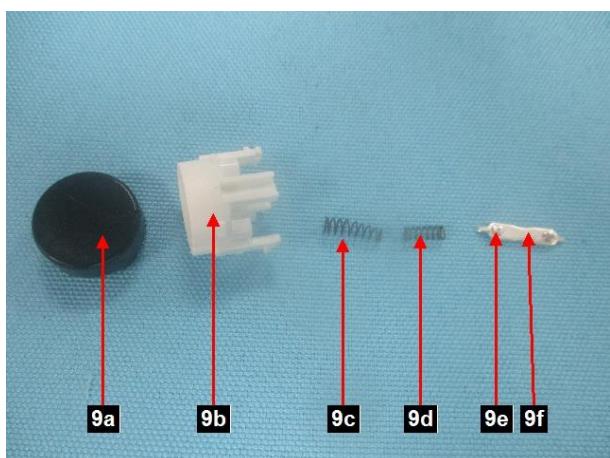
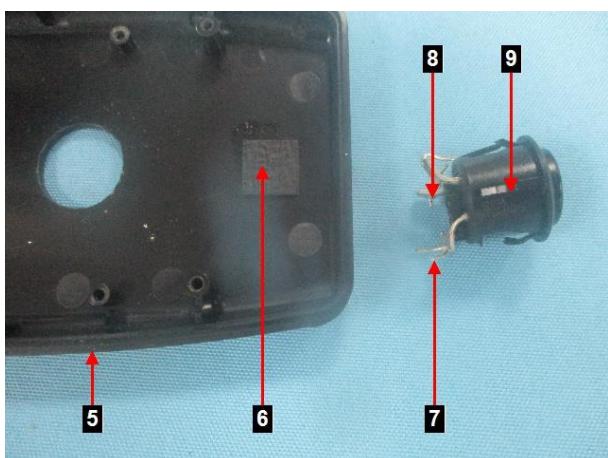
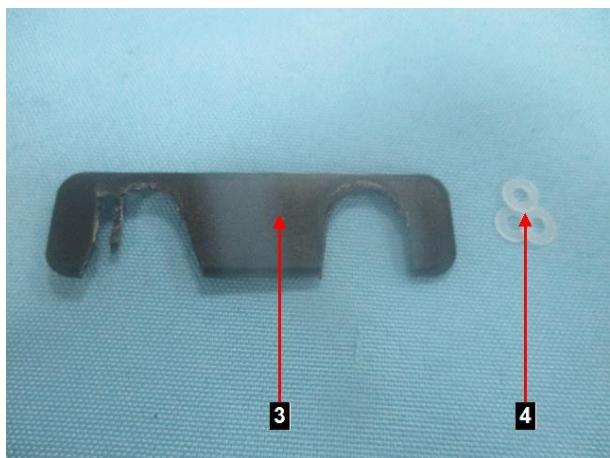
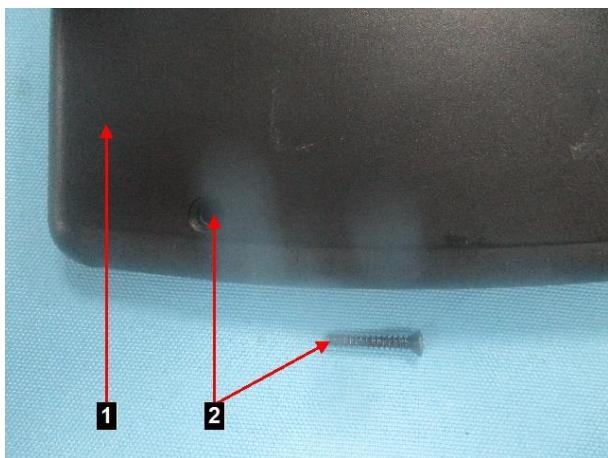
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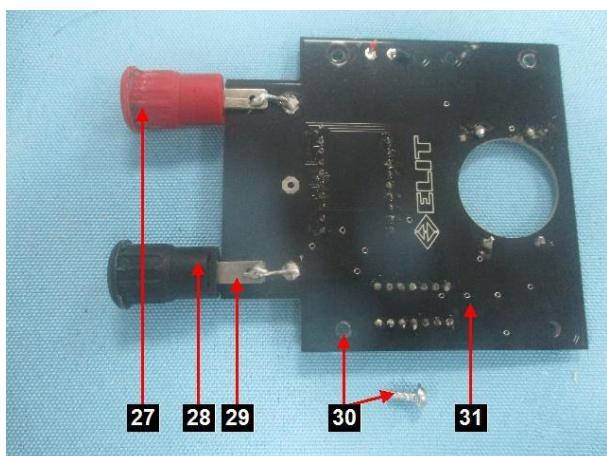
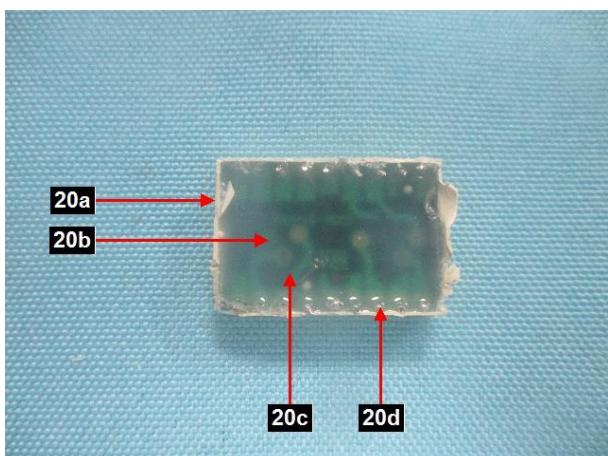
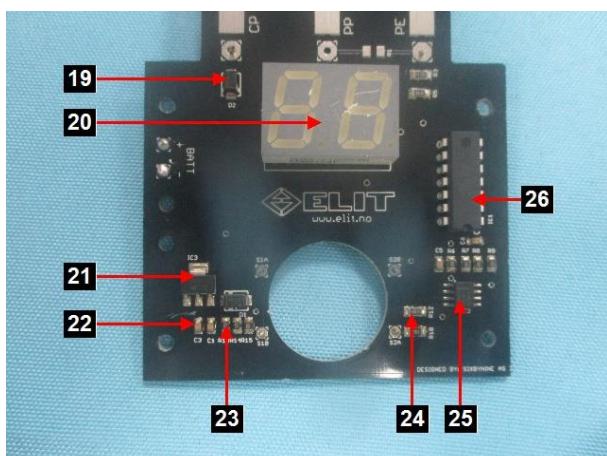
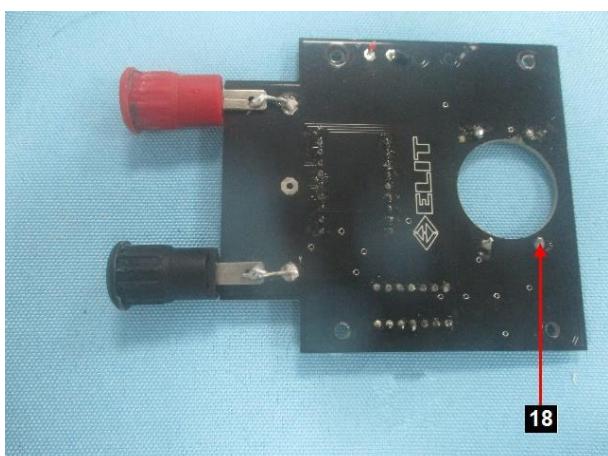
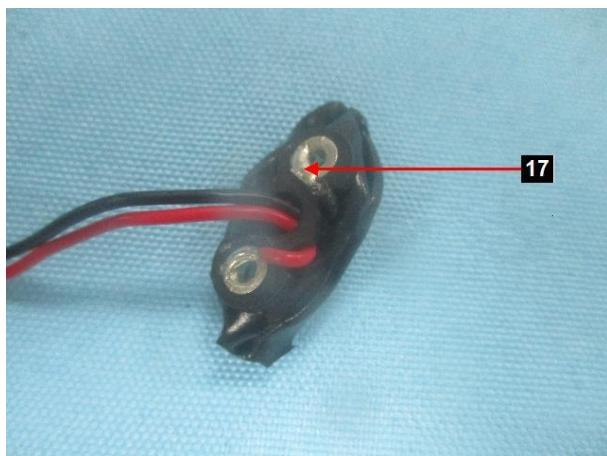
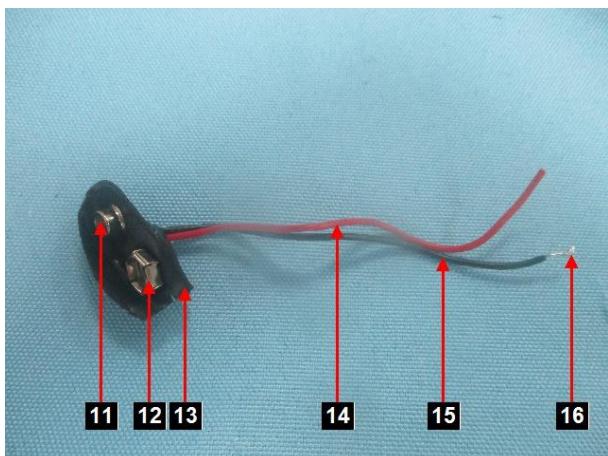
Sample photo



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End of report

